

## Technical Papers

## A

**AOSTRA** — AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.

**Abdul-Latif, A.A.** — Geostatistical Evaluation of the Abu Tartur Phosphate Deposit, Western Desert, Egypt, by A. Sahin and A.A. Abdul-Latif, Vol. 83, No. 934, P56-61, Feb. 90.

**Abu Tartur** — Geostatistical Evaluation of the Abu Tartur Phosphate Deposit, Western Desert, Egypt, by A. Sahin and A.A. Abdul-Latif, Vol. 83, No. 934, P56-61, Feb. 90.

**Acid Mine Drainage (AMD)** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.

**Acid Rain** — The SO<sub>2</sub> Abatement Project, by M.C. Bell, J.A. Blanco, H. Davies and P. Garritsen, Vol. 83, No. 933, P47-50, Jan. 90. — TransAlta's Low NO<sub>x</sub>/SO<sub>x</sub> Burner, by G.D. Bateson, Vol. 83, No. 944, P29-32, Dec. 90.

**Administrative Services** — Organization of Administrative and Technical Services — Les Mines Selbaie, by R.C. Bryce, Vol. 83, No. 936, P105-107, Apr. 90.

**Aeromagnetic Data** — Interpretation of Second Derivative Aeromagnetic Maps at the Silver Queen and Equity Silver Mines, Houston, B.C., by B.N. Church and A.R. Pettipas, Vol. 83, No. 934, P69-76, Feb. 90.

**Agassiz Deposit** — From Nickel to Gold, by R. Voisey and R.J. Spencer, Vol. 83, No. 943, P90-96, Nov. 90.

**Ames, L.M.** — People, Quality and Processing Improvement, by L.M. Ames and W.D. Harwood, Vol. 83, No. 933, P51-56, Jan. 90.

**Amorphous Deposits** — Disseminated Flake Graphite and Amorphous Graphite Deposit Types: an Analysis Using Grade and Tonnage Models, by D.M. Sutphin and J.D. Bliss, Vol. 83, No. 940, P85-89, Aug. 90.

**Analyses de la régression** — Sélection optimale des quantités d'exploits basée sur des contraintes de production et un résultat d'analyse de régression multiple, par M. Laflamme et J.L. Collins, Vol. 83, No. 937, P68-72, May 90.

**Anderle, J.P.** — Exploration Drilling of Evaporites: Procedures Developed in Eastern Canada, by D.C. Carter and J.P. Anderle, Vol. 83, No. 939, P103-112, July 90.

**Andrews, P.R.A.** — Anion Activation in the Flotation of Chromite from a Low-grade Ore, by P.R.A. Andrews, Vol. 83, No. 938, P67-69, June 90.

**Athabasca Oil Sands** — AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.

**Atomic Energy of Canada Ltd.** — Fracture Characterization in Granite Using Ground Probing Radar, by Arthur L. Holloway and James C. Mugford, Vol. 83, No. 940, P61-70, Aug. 90.

**Automatically-controlled Systems** — CCARM's Research on Mining Simulators and Their Role in Maintenance and Training, by J.B. Edwards, Vol. 83, No. 933, P79-86, Jan. 90.

**Automation** — Maintenance Improvements and Innovations at Noranda Minerals, by J.C. Bélanger and D.W.I. Griffiths, Vol. 83, No. 942, P65-66, Oct. 90.

## B

**BC AMD** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.

**Backfilling** — Roadheader Excavation in Consolidated Rockfill at Kidd Creek Mines, by V.C. Wittchen, J.E. Croxall and T.R. Yu, Vol. 83, No. 937, P41-45, May 90. — The Application of High Density Paste Backfill at Dome Mine, by R.J. Perry and D.L. Churcher, Vol. 83, No. 937, P53-58, May 90. — Control of Sodium-rich Brine Inflows at Central Canada Potash — Part 1: Rehabilitation, Diamond Drilling, Grouting and Backfilling, by A.M. Coode and E.M. De Souza, Vol. 83, No. 941, P81-86, Sept. 90.

**British Columbia** — Industrial Minerals in British Columbia — New Developments, New Discoveries and New Opportunities, by Z.D. Hora, Vol. 83, No. 933, P74-78, Jan. 90.

**British Columbia Acid Mine Drainage Task Force** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.

**Bryce, R.C.** — Les Mines Selbaie Story — Introduction, by R.C. Bryce, Vol. 83, No. 936, P73-76, Apr. 90. — Organization of Administrative and Technical Services — Les Mines Selbaie, by R.C. Bryce, Vol. 83, No. 936, P105-107, Apr. 90.

## Technical Papers

## A

**AOSTRA** — AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.

**Abdul-Latif, A.A.** — Geostatistical Evaluation of the Abu Tartur Phosphate Deposit, Western Desert, Egypt, by A. Sahin and A.A. Abdul-Latif, Vol. 83, No. 934, P56-61, Feb. 90.

**Abu Tartur** — Geostatistical Evaluation of the Abu Tartur Phosphate Deposit, Western Desert, Egypt, by A. Sahin and A.A. Abdul-Latif, Vol. 83, No. 934, P56-61, Feb. 90.

**Acid Mine Drainage (AMD)** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.

**Acid Rain** — The SO<sub>2</sub> Abatement Project, by M.C. Bell, J.A. Blanco, H. Davies and P. Garritsen, Vol. 83, No. 933, P47-50, Jan. 90. — TransAlta's Low NO<sub>x</sub>/SO<sub>x</sub> Burner, by G.D. Bateson, Vol. 83, No. 944, P29-32, Dec. 90.

**Administrative Services** — Organization of Administrative and Technical Services — Les Mines Selbaie, by R.C. Bryce, Vol. 83, No. 936, P105-107, Apr. 90.

**Aeromagnetic Data** — Interpretation of Second Derivative Aeromagnetic Maps at the Silver Queen and Equity Silver Mines, Houston, B.C., by B.N. Church and A.R. Pettipas, Vol. 83, No. 934, P69-76, Feb. 90.

**Agassiz Deposit** — From Nickel to Gold, by R. Voisey and R.J. Spencer, Vol. 83, No. 943, P90-96, Nov. 90.

**Ames, L.M.** — People, Quality and Processing Improvement, by L.M. Ames and W.D. Harwood, Vol. 83, No. 933, P51-56, Jan. 90.

**Amorphous Deposits** — Disseminated Flake Graphite and Amorphous Graphite Deposit Types: an Analysis Using Grade and Tonnage Models, by D.M. Sutphin and J.D. Bliss, Vol. 83, No. 940, P85-89, Aug. 90.

**Analyses de la régression** — Sélection optimale des quantités d'exploits basée sur des contraintes de production et un résultat d'analyse de régression multiple, par M. Laflamme et J.L. Collins, Vol. 83, No. 937, P68-72, May 90.

**Anderle, J.P.** — Exploration Drilling of Evaporites: Procedures Developed in Eastern Canada, by D.C. Carter and J.P. Anderle, Vol. 83, No. 939, P103-112, July 90.

**Andrews, P.R.A.** — Anion Activation in the Flotation of Chromite from a Low-grade Ore, by P.R.A. Andrews, Vol. 83, No. 938, P67-69, June 90.

**Athabasca Oil Sands** — AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.

**Atomic Energy of Canada Ltd.** — Fracture Characterization in Granite Using Ground Probing Radar, by Arthur L. Holloway and James C. Mugford, Vol. 83, No. 940, P61-70, Aug. 90.

**Automatically-controlled Systems** — CCARM's Research on Mining Simulators and Their Role in Maintenance and Training, by J.B. Edwards, Vol. 83, No. 933, P79-86, Jan. 90.

**Automation** — Maintenance Improvements and Innovations at Noranda Minerals, by J.C. Bélanger and D.W.I. Griffiths, Vol. 83, No. 942, P65-66, Oct. 90.

## B

**BC AMD** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.

**Backfilling** — Roadheader Excavation in Consolidated Rockfill at Kidd Creek Mines, by V.C. Wittchen, J.E. Croxall and T.R. Yu, Vol. 83, No. 937, P41-45, May 90. — The Application of High Density Paste Backfill at Dome Mine, by R.J. Perry and D.L. Churcher, Vol. 83, No. 937, P53-58, May 90. — Control of Sodium-rich Brine Inflows at Central Canada Potash—Part 1: Rehabilitation, Diamond Drilling, Grouting and Backfilling, by A.M. Coode and E.M. De Souza, Vol. 83, No. 941, P81-86, Sept. 90.

**British Columbia** — Industrial Minerals in British Columbia — New Developments, New Discoveries and New Opportunities, by Z.D. Hora, Vol. 83, No. 933, P74-78, Jan. 90.

**British Columbia Acid Mine Drainage Task Force** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.

**Bryce, R.C.** — Les Mines Selbaie Story — Introduction, by R.C. Bryce, Vol. 83, No. 936, P73-76, Apr. 90. — Organization of Administrative and Technical Services — Les Mines Selbaie, by R.C. Bryce, Vol. 83, No. 936, P105-107, Apr. 90.

# C

**CAMECO** — Maintenance Management Control Through Utilization of a Computerized System at the Key Lake Project, by T. Warren and R. Pender, Vol. 83, No. 942, P67-71, Oct. 90.

**CCARM** — CCARM's Research on Mining Simulators and Their Role in Maintenance and Training, by J.B. Edwards, Vol. 83, No. 933, P79-86, Jan. 90.

**Caley, W.F.** — New Industrial Mineral Opportunities in Southeastern Ontario, by P.W. Kingston, A. MacKinnon and W.F. Caley, Vol. 83, No. 934, P92-100, Feb. 90.

**Calibration Probes** — A Calibration Probe for Level Detection Systems in Flotation Columns, by C.O. Gomez, A. Uribe-Salas, J.A. Finch and B.J. Huls, Vol. 83, No. 935, P118-121, Mar. 90.

**Cambior** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

**Campbell, L.G.** — Supervisors — Their Selection and Development, by L.G. Campbell and P. Moon, Vol. 83, No. 944, P56-59, Dec. 90.

**Canadian Centre for Automation and Robotics in Mining** — CCARM's Research on Mining Simulators and Their Role in Maintenance and Training, by J.B. Edwards, Vol. 83, No. 933, P79-86, Jan. 90.

**Cape Breton Development Corporation** — Cape Breton Development Corporation: an Overview, by R.G. Cooper and J. Kochhar, Vol. 83, No. 940, P78-80, Aug. 90.

- Phalen Colliery: Production and Productivity, by G.R. White, Vol. 83, No. 940, P81-84, Aug. 90.

**Caron, D.** — Open Pit Mine — Les Mines Selbaie, by C. Pageau and D. Caron, Vol. 83, No. 936, P88-93, Apr. 90.

**Carter, D.C.** — Exploration Drilling of Evaporites: Procedures Developed in Eastern Canada, by D.C. Carter and J.P. Anderle, Vol. 83, No. 939, P103-112, July 90.

**Ceramic Coatings** — Les revêtements céramiques: procédés actuels et futurs développements, par S. Dallaire, Vol. 83, No. 941, P93-101, Sept. 90.

**Ceramics** — Ceramics for the Continuous Casting of Small Cross Section Products, by A.J. Rigby, N.A. McPherson and P.C. Stevens, Vol. 83, No. 938, P81-84, June 90.

**Champigny, N.** — Computer-based Reserve Estimation and Grade Control: Practitioners' Views, by N. Champigny and P.H. Grimley, Vol. 83, No. 942, P75-77, Oct. 90.

**Chauvai, N.-E.** — Gold Deposit Estimation Using Indicator Kriging, by K. Fytas, N.-E. Chauvai and M. Lavigne, Vol. 83, No. 934, P77-83, Feb. 90.

**Chimo Mine** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

**Chromite** — Anionic Activation in the Flotation of Chromite from a Low-grade Ore, by P.R.A. Andrews, Vol. 83, No. 938, P67-69, June 90.

**Church, B.N.** — Interpretation of Second Derivative Aeromagnetic Maps at the Silver Queen and Equity Silver Mines, Houston, B.C., by B.N. Church and A.R. Pettipas, Vol. 83, No. 934, P69-76, Feb. 90.

**Churcher, D.L.** — The Application of High Density Paste Backfill at Dome Mine, by R.J. Perry and D.L. Churcher, Vol. 83, No. 937, P53-58, May 90.

**Claridge, F.** — The Use of Rock Drains in Surface Mine Waste Dumps, by B.M. Das, F. Claridge and V.K. Garga, Vol. 83, No. 940, P78-83, Oct. 90.

**Clauzier, B.J.** — Energy Management System at Falconbridge Limited, Onaping Operation, by B.J. Clauzier and D.W. Euler, Vol. 83, No. 935, P113-117, Mar. 90.

**Clement, W.P.** — P.T. Inco (Indonesia) Plant Expansion, by M.C. Bell and W.P. Clement, Vol. 83, No. 933, P57-59, Jan. 90.

**Coal Burning Technology** — TransAlta's Low NO<sub>x</sub>/SO<sub>x</sub> Burner, by G.D. Bateson, Vol. 83, No. 944, P29-32, Dec. 90.

**Coal Mining** — Balmer's In-pit Coal Conveyor: Improving Haulage Efficiency, C.H. van Eendenburg, Vol. 83, No. 939, P99-102, July 90.

- Cape Breton Development Corporation: an Overview, by R.G. Cooper and J. Kochhar, Vol. 83, No. 940, P78-80, Aug. 90.
- Phalen Colliery: Production and Productivity, by G.R. White, Vol. 83, No. 940, P81-84, Aug. 90.
- Coal Slurry Pipeline Flow: a Review of Transport Options, by C.A. Shook, R.G. Gillies and W.H.W. Husband, Vol. 83, No. 942, P84-89, Oct. 90.

**Coal-Water Fuels** — Coal Slurry Pipeline Flow: a Review of Transport Options, by C.A. Shook, R.G. Gillies and W.H.W. Husband, Vol. 83, No. 942, P84-89, Oct. 90.

**Collins, J.L.** — Sélection optimale des quantités d'explosifs basée sur des contraintes de production et un résultat d'analyse de régression multiple, par M. Laflamme et J.L. Collins, Vol. 83, No. 937, P68-72, May 90.

**Combustion Detectors** — Computerized Fire Monitoring, Criteria, Techniques and Experience at Inco Limited, by J.S. Stachulak, Vol. 83, No. 937, P59-67, May 90.

**Computer Applications** — CCARM's Research on Mining Simulators and Their Role in Maintenance and Training, by J.B. Edwards, Vol. 83, No. 933, P79-86, Jan. 90.

- Computerized Fire Monitoring, Criteria, Techniques and Experience at Inco Limited, by J.S. Stachulak, Vol. 83, No. 937, P59-67, May 90.
- Boiler Tube Failure Mechanism Recognition — an Expert System, by P. Mayer, Vol. 83, No. 939, P92-95, July 90.
- Maintenance Management Control Through Utilization of a Computerized System at the Key Lake Project, by T. Warren and R. Pender, Vol. 83, No. 942, P67-71, Oct. 90.
- Computer-based Reserve Estimation and Grade Control: Practitioners' Views, by N. Champigny and P.H. Grimley, Vol. 83, No. 942, P75-77, Oct. 90.
- Calculate Countercurrent Washing Efficiency with Dirty Wash Solution, by R.B. Stein, Vol. 83, No. 944, P68-72, Dec. 90.

**Concentrator Development** — Concentrator Development and Operation, by K. Wood and L. Duval, Vol. 83, No. 936, P94-100, Apr. 90.

**Continuous Casting** — Ceramics for the Continuous Casting of Small Cross Section Products, by A.J. Rigby, N.A. McPherson and P.C. Stevens, Vol. 83, No. 938, P81-84, June 90.

**Conveyors** — Balmer's In-pit Coal Conveyor: Improving Haulage Efficiency, C.H. van Eendenburg, Vol. 83, No. 939, P99-102, July 90.

- Research and Maintenance Engineering Support to the Syncrude Mining Operation, by D. Kershaw, Vol. 83, No. 942, P55-60, Oct. 90.
- Better Maintenance of Belt Conveyors Through Good Design, by D.A. Mackie and J.E. Rider, Vol. 83, No. 942, P61-64, Oct. 90.

**Coode, A.M.** — Control of Sodium-rich Brine Inflows at Central Canada Potash — Part 1: Rehabilitation, Diamond Drilling, Grouting and Backfilling, by A.M. Coode and E.M. De Souza, Vol. 83, No. 941, P81-86, Sept. 90.

- Control of Sodium-Rich Brine Inflows at Central Canada Potash — Part 2: Rock Mechanics, Instrumentation and Results, by E.M. De Souza and A.M. Coode, Vol. 83, No. 941, P87-92, Sept. 90.

**Cook, N.J.** — Mineralogical Examination of Gold-bearing Samples, by N.J. Cook, Vol. 83, No. 944, P51-55, Dec. 90.

**Cooper, R.G.** — Cape Breton Development Corporation: an Overview, by R.G. Cooper and J. Kochhar, Vol. 83, No. 940, P78-80, Aug. 90.

**Cope, G.R.** — Gold Exploration Success Along Structural Trends in the Sicker Group of Vancouver Island, British Columbia, by J.S. Getsinger, T. Neale, K.D. Lund and G.R. Cope, Vol. 83, No. 935, P125-136, Mar. 90.

**Copper** — Geology — Les Mines Selbaie, by J.J. Bouillon, Vol. 83, No. 936, P79-82, Apr. 90.

**Copper Composites** — Value Added Products, by J.A.E. Bell, Vol. 83, No. 933, P67-73, Jan. 90.

**Copper Deposits** — The Lakeshore Porphyry Copper Deposit, Pinal County, Arizona: Geologic Setting and Physical Controls of Mineralization, by H.L.O. Huyck, Vol. 83, No. 937, P77-88, May 90.

**Corporate Profile** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

**Corrosion** — Corrosion Survey of Steel H-piles Supporting a Small Craft Harbours Wharf in Trepassey, Newfoundland, by R.M. Hopkins and C.C. Monahan, Vol. 83, No. 935, P155-161, Mar. 90.

- An Electrochemical Criterion for Galvanic Protection of Steel Exposed to Marine Environments, by B.E. Wilde, Vol. 83, No. 935, P162-164, Mar. 90.
- Feasibility of Long-term Ground Control with Stainless Steel Friction Rock Bolts, by P.K. Kaiser, S.M. Maloney and S.P. Singh, Vol. 83, No. 940, P55-60, Aug. 90.

**Coté, C.** — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.

**Countercurrent Decantation Circuits** — Calculate Countercurrent Washing Efficiency with Dirty Wash Solution, by R.B. Stein, Vol. 83, No. 944, P68-72, Dec. 90.

**Croxall, J.E.** — Roadheader Excavation in Consolidated Rockfill at Kidd Creek Mines, by V.C. Wittchen, J.E. Croxall and T.R. Yu, Vol. 83, No. 937, P41-45, May 90.

- Loose Rock Detection with Infrared Thermography, by T.R. Yu, J.G. Henning and J.E. Croxall, Vol. 83, No. 937, P46-52, May 90.

**Cruden, D.M.** — Rapid Graphical Analysis of Rock Slopes, by D.M. Cruden, Vol. 83, No. 937, P73-76, May 90.

**Curlook, W.** — Taking Inco into the 90s, by W. Curlook, Vol. 83, No. 933, P45-46, Jan. 90.

**Cyprus-Casa Grande Deposit** — The Lakeshore Porphyry Copper Deposit, Pinal County, Arizona: Geologic Setting and Physical Controls of Mineralization, by H.L.O. Huyck, Vol. 83, No. 937, P77-88, May 90.

**Cyr, R.** — Application of Longhole Drilling Methods for Narrow Vein Mining, by P. Larsen, R. Cyr and W. Quesnel, Vol. 83, No. 937, P35-40, May 90.

## D

**Dallaire, S.** — Les revêtements céramiques: procédés actuels et futurs développements, par S. Dallaire, Vol. 83, No. 941, P93-101, Sept. 90.

**Das, B.M.** — The Use of Rock Drains in Surface Mine Waste Dumps, by B.M. Das, F. Claridge and V.K. Garga, Vol. 83, No. 940, P78-83, Oct. 90.

**Davies, H.** — The SO<sub>2</sub> Abatement Project, by M.C. Bell, J.A. Blanco, H. Davies and P. Garritsen, Vol. 83, No. 933, P47-50, Jan. 90.

**De Souza, E.M.** — Control of Sodium-rich Brine Inflows at Central Canada Potash — Part 1: Rehabilitation, Diamond Drilling, Grouting and Backfilling, by A.M. Coode and E.M. De Souza, Vol. 83, No. 941, P81-86, Sept. 90.

— Control of Sodium-Rich Brine Inflows at Central Canada Potash — Part 2: Rock Mechanics, Instrumentation and Results, by E.M. De Souza and A.M. Coode, Vol. 83, No. 941, P87-92, Sept. 90.

**Degassing** — RH Vacuum Degassing — Operating Experience and Refractory Design, by B.H. Baker and B.P. Schrader, Vol. 83, No. 938, P85-89, June 90.

**Diamond Drilling** — Control of Sodium-rich Brine Inflows at Central Canada Potash — Part 1: Rehabilitation, Diamond Drilling, Grouting and Backfilling, by A.M. Coode and E.M. De Souza, Vol. 83, No. 941, P81-86, Sept. 90.

**Diesel Emissions** — Safety and Health in the Canadian Mine Environment — an Overview of Ventilation, Dust, Radiation and Diesel Emission Research, by M.G. Grenier and S.G. Hardcastle, Vol. 83, No. 944, P41-46, Dec. 90.

**Dimitrakopoulos, R.** — Machine Mining of Narrow, Hardrock Orebodies, by M. Scoble, R. Dimitrakopoulos, J. Peck and F. Brackenbusch, Vol. 83, No. 935, P105-112, Mar. 90.

**Disseminated Flake Graphite Deposits** — Disseminated Flake Graphite and Amorphous Graphite Deposit Types: an Analysis Using Grade and Tonnage Models, by D.M. Sutphin and J.D. Bliss, Vol. 83, No. 940, P85-89, Aug. 90.

**Doyon Mine** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

**Drilling Methods** — Application of Longhole Drilling Methods for Narrow Vein Mining, by P. Larsen, R. Cyr and W. Quesnel, Vol. 83, No. 937, P35-40, May 90.

— Exploration Drilling of Evaporites: Procedures Developed in Eastern Canada, by D.C. Carter and J.P. Anderle, Vol. 83, No. 939, P103-112, July 90.

**Duval, L.** — Concentrator Development and Operation, by K. Wood and L. Duval, Vol. 83, No. 936, P94-100, Apr. 90.

## E

**Economic Geology** — Disseminated Flake Graphite and Amorphous Graphite Deposit Types: an Analysis Using Grade and Tonnage Models, by D.M. Sutphin and J.D. Bliss, Vol. 83, No. 940, P85-89, Aug. 90.

— Variation of Gold Content with Depth in the San Antonio Gold Mine, by B.H. Whiting and A.J. Sinclair, Vol. 83, No. 941, P43-46, Sept. 90.

— Bralorne: a Mesothermal, Shield-type Vein Gold Deposit of Cretaceous Age in Southwestern British Columbia, by C.H.B. Leitch, Vol. 83, No. 941, P53-80, Sept. 90.

**Education** — CANMET - University Programs in Mining Innovation, by N. Billeter, R. Sage, M.D. Everell and G. Herget, Vol. 83, No. 937, P89-91, May 90.

**Edwards, J.B.** — CCARM's Research on Mining Simulators and Their Role in Maintenance and Training, by J.B. Edwards, Vol. 83, No. 933, P79-86, Jan. 90.

**Electric Power Plant** — Boiler Tube Failure Mechanism Recognition — an Expert System, by P. Mayer, Vol. 83, No. 939, P92-95, July 90.

**Emission Control** — The SO<sub>2</sub> Abatement Project, by M.C. Bell, J.A. Blanco, H. Davies and P. Garritsen, Vol. 83, No. 933, P47-50, Jan. 90.

— Safety and Health in the Canadian Mine Environment — an Over-

view of Ventilation, Dust, Radiation and Diesel Emission Research, by M.G. Grenier and S.G. Hardcastle, Vol. 83, No. 944, P41-46, Dec. 90.

**Employee Relations** — People, Quality and Processing Improvement, by L.M. Ames and W.D. Harwood, Vol. 83, No. 933, P51-56, Jan. 90.

**Energy Management** — Energy Management System at Falconbridge Limited, Onaping Operation, by B.J. Clauzier and D.W. Euler, Vol. 83, No. 935, P113-117, Mar. 90.

**Environment** — TransAlta's Low NO<sub>x</sub>/SO<sub>x</sub> Burner, by G.D. Bateson, Vol. 83, No. 944, P29-32, Dec. 90.

**Environmental Concerns** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.

**Epigenetic Gold Deposits** — Epigenetic Gold Deposits and Their Tectonic Setting in the New Brunswick Appalachians, by A.A. Ruitenberg, S.C. Johnson and L.R. Fyffe, Vol. 83, No. 934, P43-55, Feb. 90.

**Equipment** — Application of Longhole Drilling Methods for Narrow Vein Mining, by P. Larsen, R. Cyr and W. Quesnel, Vol. 83, No. 937, P35-40, May 90.

— The Future of AC Static Drive Systems on Open Cast Mining Machinery, by T.W. Sullivan, Vol. 83, No. 939, P84-88, July 90.

— Balmer's In-pit Coal Conveyor: Improving Haulage Efficiency, C.H. van Eendenburg, Vol. 83, No. 939, P99-102, July 90.

— Planning of Mine Hoisting Systems, by J.R. Morris, Vol. 83, No. 942, P47-54, Oct. 90.

— Research and Maintenance Engineering Support to the Syncrude Mining Operation, by D. Kershaw, Vol. 83, No. 942, P55-60, Oct. 90.

**Equipment Design** — Machine Mining of Narrow, Hardrock Orebodies, by M. Scoble, R. Dimitrakopoulos, J. Peck and F. Brackenbusch, Vol. 83, No. 935, P105-112, Mar. 90.

— Better Maintenance of Belt Conveyors Through Good Design, by D.A. Mackie and J.E. Rider, Vol. 83, No. 942, P61-64, Oct. 90.

**Equipment Maintenance** — Equipment Maintenance — Les Mines Selbaie, by G. Begin, Vol. 83, No. 936, P101-104, Apr. 90.

**Ethier, M.C.** — Performance Improvement at the Bell Mine, by M.C. Ethier and A.L. Laramie, Vol. 83, No. 939, P79-83, July 90.

**Euler, D.W.** — Energy Management System at Falconbridge Limited, Onaping Operation, by B.J. Clauzier and D.W. Euler, Vol. 83, No. 935, P113-117, Mar. 90.

**Everell, M.D.** — CANMET - University Programs in Mining Innovation, by N. Billeter, R. Sage, M.D. Everell and G. Herget, Vol. 83, No. 937, P89-91, May 90.

**Excavators** — The Future of AC Static Drive Systems on Open Cast Mining Machinery, by T.W. Sullivan, Vol. 83, No. 939, P84-88, July 90.

**Expansion Projects** — P.T. Inco (Indonesia) Plant Expansion, by M.C. Bell and W.P. Clement, Vol. 83, No. 933, P57-59, Jan. 90.

**Expert Systems** — Boiler Tube Failure Mechanism Recognition — an Expert System, by P. Mayer, Vol. 83, No. 939, P92-95, July 90.

**Exploration** — Industrial Minerals in British Columbia—New Developments, New Discoveries and New Opportunities, by Z.D. Hora, Vol. 83, No. 933, P74-78, Jan. 90.

— Epigenetic Gold Deposits and Their Tectonic Setting in the New Brunswick Appalachians, by A.A. Ruitenberg, S.C. Johnson and L.R. Fyffe, Vol. 83, No. 934, P43-55, Feb. 90.

— Geostatistical Evaluation of the Abu Tatur Phosphate Deposit, Western Desert, Egypt, by A. Sahin and A.A. Abdul-Latif, Vol. 83, No. 934, P56-61, Feb. 90.

— Paleo-geomorphology in the Exploration for Undiscovered Sandstone-lead Deposits, Salmon River Basin, Nova Scotia, by D.F. Sangster and P.D. Vaillancourt, Vol. 83, No. 934, P62-68, Feb. 90.

— Interpretation of Second Derivative Aeromagnetic Maps at the Silver Queen and Equity Silver Mines, Houston, B.C., by B.N. Church and A.R. Pettipas, Vol. 83, No. 934, P69-76, Feb. 90.

— L'exploration et la mise en valeur des minéraux industriels dans la province de Grenville, Québec, dans les années 80, par H.-L. Jacob et S. Nantel, Vol. 83, No. 934, P84-91, Feb. 90.

— New Industrial Mineral Opportunities in Southeastern Ontario, by P.W. Kingston, A. MacKinnon and W.F. Caley, Vol. 83, No. 934, P92-100, Feb. 90.

— Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.

— Gold Exploration Success Along Structural Trends in the Sicker Group of Vancouver Island, British Columbia, by J.S. Getzinger, T. Neale, K.D. Lund and G.R. Cope, Vol. 83, No. 935, P125-136, Mar. 90.

— La détermination des EGP dans les roches: revue des techniques analytiques basées sur l'utilisation de la fusion plombeuse et de la fusion au sulfure de nickel, par M. Bergeron, Vol. 83, No. 936, P108-113, Apr. 90.

- Cannon Mine's B-Neath Zone — Exploration Through Production, by J.J. Baz-Dresch, Vol. 83, No. 938, P43-48, June 90.
- Exploration Drilling of Evaporites: Procedures Developed in Eastern Canada, by D.C. Carter and J.P. Anderie, Vol. 83, No. 939, P103-112, July 90.
- Valuation of Mineral Properties which do not Contain Exploitable Reserves, by L.C. Kilburn, Vol. 83, No. 940, P90-93, Aug. 90.
- The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.
- Explosives** — Sélection optimale des quantités d'explosifs basée sur des contraintes de production et un résultat d'analyse de régression multiple, par M. Laflamme et J.L. Collins, Vol. 83, No. 937, P68-72, May 90.

## F

- Ferguson, K.** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.
- Filion, M.P.** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.
- Finch, J.A.** — A Calibration Probe for Level Detection Systems in Flotation Columns, by C.O. Gomez, A. Uribe-Salas, J.A. Finch and B.J. Huls, Vol. 83, No. 935, P118-121, Mar. 90.
- Fire Warning Systems** — Computerized Fire Monitoring, Criteria, Techniques and Experience at Inco Limited, by J.S. Stachulak, Vol. 83, No. 937, P59-67, May 90.
- Fiset, M.** — The Wear of Materials Sliding Against Road Surfaces, by M. Fiset and D. Belley, Vol. 83, No. 941, P111-115, Sept. 90.
- Flotation** — Anionic Activation in the Flotation of Chromite from a Low-grade Ore, by P.R.A. Andrews, Vol. 83, No. 938, P67-69, June 90.
- Flotation Columns** — A Calibration Probe for Level Detection Systems in Flotation Columns, by C.O. Gomez, A. Uribe-Salas, J.A. Finch and B.J. Huls, Vol. 83, No. 935, P118-121, Mar. 90.
- Fluorspar** — New Industrial Mineral Opportunities in Southeastern Ontario, by P.W. Kingston, A. MacKinnon and W.F. Caley, Vol. 83, No. 934, P92-100, Feb. 90.
- Fourmanoit, Y.** — Underground Mining — Les Mines Selbaie, by Y. Fourmanoit, Vol. 83, No. 936, P83-87, Apr. 90.
- Fragmentation** — A Blast Design Model Using the Inherent Fragmentation of a Rock Mass, by Brian C. Maynard, Vol. 83, No. 940, P71-77, Aug. 90.
- Fullman, P.J.** — Stacking of Potash Mill Tailings, by G.A. Maki, R.G. Roden and P.J. Fullman, Vol. 83, No. 939, P96-98, July 90.
- Fyffe, L.R.** — Epigenetic Gold Deposits and Their Tectonic Setting in the New Brunswick Appalachians, by A.A. Ruitenberg, S.C. Johnson and L.R. Fyffe, Vol. 83, No. 934, P43-55, Feb. 90.
- Late Precambrian-Early Paleozoic Volcanic Regimes and Associated Massive Sulphide Deposits in the Northeastern Mainland Appalachians, by L.R. Fyffe, C.R. van Staal and J.A. Winchester, Vol. 83, No. 938, P70-78, June 90.
- Fytas, K.** — Gold Deposits Estimation Using Indicator Kriging, by K. Fytas, N.-E. Chaouai and M. Lavigne, Vol. 83, No. 934, P77-83, Feb. 90.

## G

- Galvanic Protection** — An Electrochemical Criterion for Galvanic Protection of Steel Exposed to Marine Environments, by B.E. Wilde, Vol. 83, No. 935, P162-164, Mar. 90.
- Garga, V.K.** — The Use of Rock Drains in Surface Mine Waste Dumps, by B.M. Das, F. Claridge and V.K. Garga, Vol. 83, No. 940, P78-83, Oct. 90.
- Garritsen, P.** — The SO<sub>2</sub> Abatement Project, by M.C. Bell, J.A. Blanco, H. Davies and P. Garritsen, Vol. 83, No. 933, P47-50, Jan. 90.
- Geller, L.B.** — How Accurate are Non-destructive-testing Based Estimates of Mine Shaft Rope Breaking-strength Losses? — An Update, by L.B. Geller and J.E. Udd, Vol. 83, No. 944, P47-50, Dec. 90.
- Geochemistry** — Late Precambrian-Early Paleozoic Volcanic Regimes and Associated Massive Sulphide Deposits in the Northeastern Mainland Appalachians, by L.R. Fyffe, C.R. van Staal and J.A. Winchester, Vol. 83, No. 938, P70-78, June 90.
- Geology** — Geology — Les Mines Selbaie, by J.J. Bouillon, Vol. 83, No. 936, P79-82, Apr. 90.
- Late Precambrian-Early Paleozoic Volcanic Regimes and Associated Massive Sulphide Deposits in the Northeastern Mainland Appalachians, by L.R. Fyffe, C.R. van Staal and J.A. Winchester, Vol. 83, No. 938, P70-78, June 90.
- Exploration Drilling of Evaporites: Procedures Developed in Eastern Canada, by D.C. Carter and J.P. Anderie, Vol. 83, No. 939, P103-112, July 90.
- Bralorne: a Mesothermal, Shield-type Vein Gold Deposit of Cretaceous Age in Southwestern British Columbia, by C.H.B. Leitch, Vol. 83, No. 941, P53-80, Sept. 90.
- Geostatistics** — Geostatistical Evaluation of the Abu Tartur Phosphate Deposit, Western Desert, Egypt, by A. Sahin and A.A. Abdul-Latif, Vol. 83, No. 934, P56-61, Feb. 90.
- Gold Deposits Estimation Using Indicator Kriging, by K. Fytas, N.-E. Chaouai and M. Lavigne, Vol. 83, No. 934, P77-83, Feb. 90.
- Getsinger, J.S.** — Gold Exploration Success Along Structural Trends in the Sicker Group of Vancouver Island, British Columbia, by J.S. Getsinger, T. Neale, K.D. Lund and G.R. Cope, Vol. 83, No. 935, P125-136, Mar. 90.
- Gignac, L.P.** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.
- Giguère, C.** — Kinematic Analysis of Auriferous Veins at the Sigma-2 Gold Mine, Louvicourt Township, Quebec, by C. Giguère and J. Béland, Vol. 83, No. 941, P47-52, Sept. 90.
- Gillies, R.G.** — Coal Slurry Pipeline Flow: a Review of Transport Options, by C.A. Shook, R.G. Gillies and W.H.W. Husband, Vol. 83, No. 942, P84-89, Oct. 90.
- Gîtes de wollastonite** — Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.
- Gittins, S.D.** — AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.
- Gold** — Inco Gold — Exploration and Development, by C. Barsotti and S. Sopher, Vol. 83, No. 933, P60-66, Jan. 90.
- Gold Deposits** — Epigenetic Gold Deposits and Their Tectonic Setting in the New Brunswick Appalachians, by A.A. Ruitenberg, S.C. Johnson and L.R. Fyffe, Vol. 83, No. 934, P43-55, Feb. 90.
- Gold Deposits Estimation Using Indicator Kriging, by K. Fytas, N.-E. Chaouai and M. Lavigne, Vol. 83, No. 934, P77-83, Feb. 90.
- Bralorne: a Mesothermal, Shield-type Vein Gold Deposit of Cretaceous Age in Southwestern British Columbia, by C.H.B. Leitch, Vol. 83, No. 941, P53-80, Sept. 90.
- From Nickel to Gold, by R. Voisey and R.J. Spencer, Vol. 83, No. 943, P90-96, Nov. 90.
- Gold Exploration** — Gold Exploration Success Along Structural Trends in the Sicker Group of Vancouver Island, British Columbia, by J.S. Getsinger, T. Neale, K.D. Lund and G.R. Cope, Vol. 83, No. 935, P125-136, Mar. 90.
- Gold Mineralization** — Variation of Gold Content with Depth in the San Antonio Gold Mine, by B.H. Whiting and A.J. Sinclair, Vol. 83, No. 941, P43-46, Sept. 90.
- Kinematic Analysis of Auriferous Veins at the Sigma-2 Gold Mine, Louvicourt Township, Quebec, by C. Giguère and J. Béland, Vol. 83, No. 941, P47-52, Sept. 90.
- Gold Mining** — Variation of Gold Content with Depth in the San Antonio Gold Mine, by B.H. Whiting and A.J. Sinclair, Vol. 83, No. 941, P43-46, Sept. 90.
- The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.
- Gold-bearing Ores** — Mineralogical Examination of Gold-bearing Samples, by N.J. Cook, Vol. 83, No. 944, P51-55, Dec. 90.
- Gomez, C.O.** — A Calibration Probe for Level Detection Systems in Flotation Columns, by C.O. Gomez, A. Uribe-Salas, J.A. Finch and B.J. Huls, Vol. 83, No. 935, P118-121, Mar. 90.
- Grade Control** — Computer-based Reserve Estimation and Grade Control: Practitioners' Views, by N. Champigny and P.H. Grimley, Vol. 83, No. 942, P75-77, Oct. 90.
- Grade Estimation** — Geostatistical Evaluation of the Abu Tartur Phosphate Deposit, Western Desert, Egypt, by A. Sahin and A.A. Abdul-Latif, Vol. 83, No. 934, P56-61, Feb. 90.
- Grade-Tonnage Models** — Disseminated Flake Graphite and Amorphous Graphite Deposit Types: an Analysis Using Grade and Tonnage Models, by D.M. Sutphin and J.D. Bliss, Vol. 83, No. 940, P85-89, Aug. 90.
- Granite Fracturing** — Fracture Characterization in Granite Using Ground Probing Radar, by Arthur L. Holloway and James C. Mugford, Vol. 83, No. 940, P61-70, Aug. 90.
- Graphite Deposits** — Disseminated Flake Graphite and Amorphous Graphite Deposit Types: an Analysis Using Grade and Tonnage Models, by D.M. Sutphin and J.D. Bliss, Vol. 83, No. 940, P85-89, Aug. 90.
- Gravity Concentration** — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.
- Grenier, M.G.** — Safety and Health in the Canadian Mine Environment —

an Overview of Ventilation, Dust, Radiation and Diesel Emission Research, by M.G. Grenier and S.G. Hardcastle, Vol. 83, No. 944, P41-46, Dec. 90.

**Grenville Province** — L'exploration et la mise en valeur des minéraux industriels dans la province de Grenville, Québec, dans les années 80, par H.-L. Jacob et S. Nantel, Vol. 83, No. 934, P84-91, Feb. 90.

— Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.

**Griffiths, D.W.I.** — Maintenance Improvements and Innovations at Noranda Minerals, by J.C. Bélanger and D.W.I. Griffiths, Vol. 83, No. 942, P65-66, Oct. 90.

**Grimley, P.H.** — Computer-based Reserve Estimation and Grade Control: Practitioners' Views, by N. Champigny and P.H. Grimley, Vol. 83, No. 942, P75-77, Oct. 90.

**Grinding Mills** — Liner Designs, Materials and Operating Practices for Large Primary Mills, by J.L. Parks and D.M. Kjos, Vol. 83, No. 943, P84-89, Nov. 90.

**Ground Control** — Feasibility of Long-term Ground Control with Stainless Steel Friction Rock Bolts, by P.K. Kaiser, S.M. Maloney and S.P. Singh, Vol. 83, No. 940, P55-60, Aug. 90.

**Ground Support** — Application of Longhole Drilling Methods for Narrow Vein Mining, by P. Larsen, R. Cyr and W. Quesnel, Vol. 83, No. 937, P35-40, May 90.

**Grouting** — Control of Sodium-rich Brine Inflows at Central Canada Potash — Part 1: Rehabilitation, Diamond Drilling, Grouting and Backfilling, by A.M. Coode and E.M. De Souza, Vol. 83, No. 941, P81-86, Sept. 90.

**Guill, R.W.** — The Apex Mine: a Case Study in Small Scale Underground Mining, by R.W. Guill, Vol. 83, No. 942, P72-74, Oct. 90.

**H**

**Hajdasinski, M.M.** — Discussion: Models of Time and Value Representation, Interest Conventions and Inflation in Project Evaluation, by M.M. Hajdasinski, Vol. 83, No. 935, P137-141, Mar. 90.

— Author's Reply, L.D. Smith's response to paper by M.M. Hajdasinski, Vol. 83, No. 935, P146, Mar. 90.

**Handford, G.T.** — Tailings Engineering at Syncrude, by L.T. Yano and G.T. Handford, Vol. 83, No. 939, P89-91, July 90.

**Hard Rock Mining** — Machine Mining of Narrow, Hardrock Orebodies, by M. Scoble, R. Dimitrakopoulos, J. Peck and F. Brackenbusch, Vol. 83, No. 935, P105-112, Mar. 90.

**Hardcastle, S.G.** — Safety and Health in the Canadian Mine Environment — an Overview of Ventilation, Dust, Radiation and Diesel Emission Research, by M.G. Grenier and S.G. Hardcastle, Vol. 83, No. 944, P41-46, Dec. 90.

**Harwood, W.D.** — People, Quality and Processing Improvement, by L.M. Ames and W.D. Harwood, Vol. 83, No. 933, P51-56, Jan. 90.

**Haston, J.A.** — AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.

**Heffernan, G.R.** — Overview of Markets and Trends in Steel, by G.R. Heffernan, Vol. 83, No. 942, P97-99, Oct. 90.

**Henning, J.G.** — Loose Rock Detection with Infrared Thermography, by T.R. Yu, J.G. Henning and J.E. Croxall, Vol. 83, No. 937, P46-52, May 90.

**Herget, G.** — CANMET - University Programs in Mining Innovation, by N. Billeter, R. Sage, M.D. Everell and G. Herget, Vol. 83, No. 937, P89-91, May 90.

**Hoisting Equipment** — How Accurate are Non-destructive-testing Based Estimates of Mine Shaft Rope Breaking-strength Losses? — an Update, by L.B. Geller and J.E. Udd, Vol. 83, No. 944, P47-50, Dec. 90.

**Hoisting Systems** — Planning of Mine Hoisting Systems, by J.R. Morris, Vol. 83, No. 942, P47-54, Oct. 90.

**Holloway, A.L.** — Fracture Characterization in Granite Using Ground Probing Radar, by Arthur L. Holloway and James C. Mugford, Vol. 83, No. 940, P61-70, Aug. 90.

**Hopkins, R.M.** — Corrosion Survey of Steel H-piles Supporting a Small Craft Harbours Wharf in Trepassey, Newfoundland, by R.M. Hopkins and C.C. Monahan, Vol. 83, No. 935, P155-161, Mar. 90.

**Hora, Z.D.** — Industrial Minerals in British Columbia — New Developments, New Discoveries and New Opportunities, by Z.D. Hora, Vol. 83, No. 933, P74-78, Jan. 90.

**Huls, B.J.** — A Calibration Probe for Level Detection Systems in Flotation Columns, by C.O. Gomez, A. Uribe-Salas, J.A. Finch and B.J. Huls, Vol. 83, No. 935, P118-121, Mar. 90.

**Human Relations** — People, Quality and Processing Improvement, by L.M. Ames and W.D. Harwood, Vol. 83, No. 933, P51-56, Jan. 90.

**Human Resources** — Organization of Administrative and Technical Services—Les Mines Selbaie, by R.C. Bryce, Vol. 83, No. 936, P105-107, Apr. 90.

— Performance Improvement at the Bell Mine, by M.C. Ethier and A.L. Laramie, Vol. 83, No. 939, P79-83, July 90.

— Supervisors — Their Selection and Development, by L.G. Campbell and P. Moon, Vol. 83, No. 944, P56-59, Dec. 90.

**Husband, W.H.W.** — Coal Slurry Pipeline Flow: a Review of Transport Options, by C.A. Shook, R.G. Gillies and W.H.W. Husband, Vol. 83, No. 942, P84-89, Oct. 90.

**Huyck, H.L.O.** — The Lakeshore Porphyry Copper Deposit, Pinal County, Arizona: Geologic Setting and Physical Controls of Mineralization, by H.L.O. Huyck, Vol. 83, No. 937, P77-88, May 90.

**Hydrometallurgy** — Calculate Countercurrent Washing Efficiency with Dirty Wash Solution, by R.B. Stein, Vol. 83, No. 944, P68-72, Dec. 90.

**I**

**Image Analysis** — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.

**Inco Limited** — Taking Inco into the 90s, by W. Curlook, Vol. 83, No. 933, P45-46, Jan. 90.

— The SO<sub>2</sub> Abatement Project, by M.C. Bell, J.A. Blanco, H. Davies and P. Garritsen, Vol. 83, No. 933, P47-50, Jan. 90.

— People, Quality and Processing Improvement, by L.M. Ames and W.D. Harwood, Vol. 83, No. 933, P51-56, Jan. 90.

— Inco Gold — Exploration and Development, by C. Barsotti and S. Sopher, Vol. 83, No. 933, P60-66, Jan. 90.

— Value Added Products, by J.A.E. Bell, Vol. 83, No. 933, P67-73, Jan. 90.

**Indicator Kriging** — Gold Deposits Estimation Using Indicator Kriging, by K. Fytas, N.-E. Chaouai and M. Lavigne, Vol. 83, No. 934, P77-83, Feb. 90.

**Industrial Minerals** — Industrial Minerals in British Columbia — New Developments, New Discoveries and New Opportunities, by Z.D. Hora, Vol. 83, No. 933, P74-78, Jan. 90.

— L'exploration et la mise en valeur des minéraux industriels dans la province de Grenville, Québec, dans les années 80, par H.-L. Jacob et S. Nantel, Vol. 83, No. 934, P84-91, Feb. 90.

— New Industrial Mineral Opportunities in Southeastern Ontario, by P.W. Kingston, A. MacKinnon and W.F. Caley, Vol. 83, No. 934, P92-100, Feb. 90.

— Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.

— Anionic Activation in the Flotation of Chromite from a Low-grade Ore, by P.R.A. Andrews, Vol. 83, No. 938, P67-69, June 90.

— Disseminated Flake Graphite and Amorphous Graphite Deposit Types: an Analysis Using Grade and Tonnage Models, by D.M. Sutphin and J.D. Bliss, Vol. 83, No. 940, P85-89, Aug. 90.

— Les revêtements céramiques: procédés actuels et futurs développements, par S. Dallaire, Vol. 83, No. 941, P93-101, Sept. 90.

**Infrared Thermography** — Loose Rock Detection with Infrared Thermography, by T.R. Yu, J.G. Henning and J.E. Croxall, Vol. 83, No. 937, P46-52, May 90.

**Instrumentation** — Control of Sodium-Rich Brine Inflows at Central Canada Potash — Part 2: Rock Mechanics, Instrumentation and Results, by E.M. De Souza and A.M. Coode, Vol. 83, No. 941, P87-92, Sept. 90.

**Iron Ore** — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P75-83, No. 90.

**J**

**Jacob, H.-L.** — Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.

— L'exploration et la mise en valeur des minéraux industriels dans la province de Grenville, Québec, dans les années 80, par H.-L. Jacob et S. Nantel, Vol. 83, No. 934, P84-91, Feb. 90.

**Johnson, S.C.** — Epigenetic Gold Deposits and Their Tectonic Setting in the New Brunswick Appalachians, by A.A. Ruitenberg, S.C. Johnson and L.R. Fyffe, Vol. 83, No. 934, P43-55, Feb. 90.

## K

**K<sup>40</sup> Monitoring System** — Experience with a new K<sup>40</sup> System at PCS Mining, Lanigan Division, by D.K. Storer, W. Lee and S. Tkach, Vol. 83, No. 938, P59-62, June 90.

**Kaiser, P.K.** — Feasibility of Long-term Ground Control with Stainless Steel Friction Rock Bolts, by P.K. Kaiser, S.M. Maloney and S.P. Singh, Vol. 83, No. 940, P55-60, Aug. 90.

**Kerr, S.S.** — Alimak Narrow Vein Mining at the Dome Mine, by B.E. Robertson, J.T. Vehkala and S.S. Kerr, Vol. 83, No. 938, P63-66, June 90.

**Kershaw, D.** — Research and Maintenance Engineering Support to the Syncrude Mining Operation, by D. Kershaw, Vol. 83, No. 942, P55-60, Oct. 90.

**Kilburn, L.C.** — Valuation of Mineral Properties which do not Contain Exploitable Reserves, by L.C. Kilburn, Vol. 83, No. 940, P90-93, Aug. 90.

**Kingston, P.W.** — New Industrial Mineral Opportunities in Southeastern Ontario, by P.W. Kingston, A. MacKinnon and W.F. Caley, Vol. 83, No. 934, P92-100, Feb. 90.

**Kjos, D.M.** — Liner Designs, Materials and Operating Practices for Large Primary Mills, by J.L. Parks and D.M. Kjos, Vol. 83, No. 943, P84-89, Nov. 90.

**Kochhar, J.** — Cape Breton Development Corporation: an Overview, by R.G. Cooper and J. Kochhar, Vol. 83, No. 940, P78-80, Aug. 90.

**Kuz-Ram Model** — A Blast Design Model Using the Inherent Fragmentation of a Rock Mass, by Brian C. Maynard, Vol. 83, No. 940, P71-77, Aug. 90.

## L

**Laflamme, M.** — Sélection optimale des quantités d'explosifs basée sur des contraintes de production et un résultat d'analyse de régression multiple, par M. Laflamme et J.L. Collins, Vol. 83, No. 937, P68-72, May 90.

**Lakeshore Deposit** — The Lakeshore Porphyry Copper Deposit, Pinal County, Arizona: Geologic Setting and Physical Controls of Mineralization, by H.L.O. Huycy, Vol. 83, No. 937, P77-88, May 90.

**Lambert, F.** — Use of Microscoop in Narrow Stope Mining, by F. Lambert, Vol. 83, No. 938, P49-52, June 90.

**Laramie, A.L.** — Performance Improvement at the Bell Mine, by M.C. Ethier and A.L. Laramie, Vol. 83, No. 939, P79-83, July 90.

**Larsen, P.** — Application of Longhole Drilling Methods for Narrow Vein Mining, by P. Larsen, R. Cyr and W. Quesnel, Vol. 83, No. 937, P35-40, May 90.

**Lavigne, M.** — Gold Deposits Estimation Using Indicator Kriging, by K. Fytas, N.-E. Chauvai and M. Lavigne, Vol. 83, No. 934, P77-83, Feb. 90.

**Law, A.J.W.** — Engineering — Les Mines Selbaie, by A.J.W. Law, Vol. 83, No. 936, P77-78, Apr. 90.

**Lead Fire-Assay** — La détermination des EGP dans les roches: revue des techniques analytiques basées sur l'utilisation de la fusion plombeuse et de la fusion au sulfure de nickel, par M. Bergeron, Vol. 83, No. 936, P108-113, Apr. 90.

**Leclerc, R.** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

**Lee, W.** — Experience with a new K<sup>40</sup> System at PCS Mining, Lanigan Division, by D.K. Storer, W. Lee and S. Tkach, Vol. 83, No. 938, P59-62, June 90.

**Leitch, C.H.B.** — Bralorne: a Mesothermal, Shield-type Vein Gold Deposit of Cretaceous Age in Southwestern British Columbia, by C.H.B. Leitch, Vol. 83, No. 941, P53-80, Sept. 90.

**Les Mines Selbaie** — Les Mines Selbaie Story — Introduction, by R.C. Bryce, Vol. 83, No. 936, P73-76, Apr. 90.

**Level Detection Systems** — A Calibration Probe for Level Detection Systems in Flotation Columns, by C.O. Gomez, A. Uribe-Salas, J.A. Finch and B.J. Huls, Vol. 83, No. 935, P118-121, Mar. 90.

**Liquefaction** — Tailings Engineering at Syncrude, by L.T. Yano and G.T. Handford, Vol. 83, No. 939, P89-91, July 90.

**Low NO<sub>x</sub>/SO<sub>x</sub> Burner** — TransAlta's Low NO<sub>x</sub>/SO<sub>x</sub> Burner, by G.D. Bateson, Vol. 83, No. 944, P29-32, Dec. 90.

**Luhning, R.W.** — AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.

**Lund, K.D.** — Gold Exploration Success Along Structural Trends in the Sicker Group of Vancouver Island, British Columbia, by J.S. Getzinger, T. Neale, K.D. Lund and G.R. Cope, Vol. 83, No. 935, P125-136, Mar. 90.

## M

**MEND** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.

**MacKinnon, A.** — New Industrial Mineral Opportunities in Southeastern Ontario, by P.W. Kingston, A. MacKinnon and W.F. Caley, Vol. 83, No. 934, P92-100, Feb. 90.

**MacLellan Deposit** — From Nickel to Gold, by R. Voisey and R.J. Spencer, Vol. 83, No. 943, P90-96, Nov. 90.

**Mackie, D.A.** — Better Maintenance of Belt Conveyors Through Good Design, by D.A. Mackie and J.E. Rider, Vol. 83, No. 942, P61-64, Oct. 90.

**Maintenance** — CCARM's Research on Mining Simulators and Their Role in Maintenance and Training, by J.B. Edwards, Vol. 83, No. 933, P79-86, Jan. 90.

— Performance Improvement at the Bell Mine, by M.C. Ethier and A.L. Laramie, Vol. 83, No. 939, P79-83, July 90.

**Maintenance Engineering** — Energy Management System at Falconbridge Limited, Onaping Operation, by B.J. Clauzier and D.W. Euler, Vol. 83, No. 935, P113-117, Mar. 90.

— Research and Maintenance Engineering Support to the Syncrude Mining Operation, by D. Kershaw, Vol. 83, No. 942, P55-60, Oct. 90.

— Better Maintenance of Belt Conveyors Through Good Design, by D.A. Mackie and J.E. Rider, Vol. 83, No. 942, P61-64, Oct. 90.

— Maintenance Improvements and Innovations at Noranda Minerals, by J.C. Bélanger and D.W.I. Griffiths, Vol. 83, No. 942, P65-66, Oct. 90.

**Maintenance Management** — Maintenance Management Control Through Utilization of a Computerized System at the Key Lake Project, by T. Warren and R. Pender, Vol. 83, No. 942, P67-71, Oct. 90.

**Maki, G.A.** — Stacking of Potash Mill Tailings, by G.A. Maki, R.G. Roden and P.J. Fullman, Vol. 83, No. 939, P96-98, July 90.

**Maloney, S.M.** — Feasibility of Long-term Ground Control with Stainless Steel Friction Rock Bolts, by P.K. Kaiser, S.M. Maloney and S.P. Singh, Vol. 83, No. 940, P55-60, Aug. 90.

**Map Interpretation** — Interpretation of Second Derivative Aeromagnetic Maps at the Silver Queen and Equity Silver Mines, Houston, B.C., by B.N. Church and A.R. Pettipas, Vol. 83, No. 934, P69-76, Feb. 90.

**Marine Industry** — Corrosion Survey of Steel H-piles Supporting a Small Craft Harbour Wharf in Trepassey, Newfoundland, by R.M. Hopkins and C.C. Monahan, Vol. 83, No. 935, P155-161, Mar. 90.

— An Electrochemical Criterion for Galvanic Protection of Steel Exposed to Marine Environments, by B.E. Wilde, Vol. 83, No. 935, P162-164, Mar. 90.

**Matousek, J.W.** — Precious Metals Losses in Pyrometallurgical Processing, by J.W. Matousek and J.G. Whellock, Vol. 83, No. 933, P97-101, Jan. 90.

**Mayer, P.** — Boiler Tube Failure Mechanism Recognition — an Expert System, by P. Mayer, Vol. 83, No. 939, P92-95, July 90.

**Maynard, B.C.** — A Blast Design Model Using the Inherent Fragmentation of a Rock Mass, by Brian C. Maynard, Vol. 83, No. 940, P71-77, Aug. 90.

**McPherson, N.A.** — Ceramics for the Continuous Casting of Small Cross Section Products, by A.J. Rigby, N.A. McPherson and P.C. Stevens, Vol. 83, No. 938, P81-84, June 90.

**Mechanical Excavation** — Roadheader Excavation in Consolidated Rockfill at Kidd Creek Mines, by V.C. Wittchen, J.E. Croxall and T.R. Yu, Vol. 83, No. 937, P41-45, May 90.

**Mechanization** — Machine Mining of Narrow, Hardrock Orebodies, by M. Scoble, R. Dimitrakopoulos, J. Peck and F. Brackenbusch, Vol. 83, No. 935, P105-112, Mar. 90.

**Metallurgical Evaluation** — Concentrator Development and Operation, by K. Wood and L. Duval, Vol. 83, No. 936, P94-100, Apr. 90.

**Metallurgy** — RH Vacuum Degassing — Operating Experience and Refractory Design, by B.H. Baker and B.P. Schrader, Vol. 83, No. 938, P85-89, June 90.

— The Wear of Materials Sliding Against Road Surfaces, by M. Fiset and D. Belley, Vol. 83, No. 941, P111-115, Sept. 90.

**Mill Liners** — Liner Designs, Materials and Operating Practices for Large Primary Mills, by J.L. Parks and D.M. Kjos, Vol. 83, No. 943, P84-89, Nov. 90.

**Milling Circuits** — Concentrator Development and Operation, by K. Wood and L. Duval, Vol. 83, No. 936, P94-100, Apr. 90.

**Mine Development** — Les Mines Selbaie Story — Introduction, by R.C. Bryce, Vol. 83, No. 936, P73-76, Apr. 90.

— Cannon Mine's B-Neath Zone — Exploration Through Production, by J.J. Baz-Dresch, Vol. 83, No. 938, P43-48, June 90.

— Use of Microscoop in Narrow Stope Mining, by F. Lambert, Vol. 83, No. 938, P49-52, June 90.

— AOSTRA Underground Test Facility: Progress and Potential, by J.A.

Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.

- The Apex Mine: a Case Study in Small Scale Underground Mining, by R.W. Guill, Vol. 83, No. 942, P72-74, Oct. 90.

**Mine Environment Neutral Drainage (MEND)** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.

**Mine Geology** — Interpretation of Second Derivative Aeromagnetic Maps at the Silver Queen and Equity Silver Mines, Houston, B.C., by B.N. Church and A.R. Pettipas, Vol. 83, No. 934, P69-76, Feb. 90.

**Mine Management** — Engineering — Les Mines Selbaie, by A.J.W. Law, Vol. 83, No. 936, P77-78, Apr. 90.

- Performance Improvement at the Bell Mine, by M.C. Ethier and A.L. Laramie, Vol. 83, No. 939, P79-83, July 90.

**Mine Monitoring Systems** — Experience with a new K<sup>40</sup> System at PCS Mining, Lanigan Division, by D.K. Storer, W. Lee and S. Tkach, Vol. 83, No. 938, P59-62, June 90.

**Mine Production** — Productivity: How do you Measure it?, by L.A. Wolff, Vol. 83, No. 935, P122-124, Mar. 90.

**Mine Safety** — Improving Mine Safety Through Perimeter Blasting at Inco Limited's Thompson T-3 Mine, by M. Sutherland, Vol. 83, No. 940, P45-48, Aug. 90.

**Mineral Deposits** — Paleo-geomorphology in the Exploration for Undiscovered Sandstone-lead Deposits, Salmon River Basin, Nova Scotia, by D.F. Sangster and P.D. Vaillancourt, Vol. 83, No. 934, P62-68, Feb. 90.

**Mineral Economics** — T. Inco (Indonesia) Plant Expansion, by M.C. Bell and W.P. Clement, Vol. 83, No. 933, P57-59, Jan. 90.

- AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.
- Valuation of Mineral Properties which do not Contain Exploitable Reserves, by L.C. Kilburn, Vol. 83, No. 940, P90-93, Aug. 90.
- Overview of Markets and Trends in Steel, by G.R. Heffernan, Vol. 83, No. 942, P97-99, Oct. 90.
- The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

**Mineral Exploration** — Inco Gold — Exploration and Development, by C. Barsotti and S. Sopher, Vol. 83, No. 933, P60-66, Jan. 90.

**Mineral Liberation** — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.

**Mineral Processing** — A Calibration Probe for Level Detection Systems in Flotation Columns, by C.O. Gomez, A. Uribe-Salas, J.A. Finch and B.J. Huls, Vol. 83, No. 935, P118-121, Mar. 90.

- Anionic Activation in the Flotation of Chromite from a Low-grade Ore, by P.R.A. Andrews, Vol. 83, No. 938, P67-69, June 90.
- A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.
- Liner Designs, Materials and Operating Practices for Large Primary Mills, by J.L. Parks and D.M. Kjos, Vol. 83, No. 943, P84-89, Nov. 90.
- From Nickel to Gold, by R. Voisey and R.J. Spencer, Vol. 83, No. 943, P90-96, Nov. 90.

**Mineral Production** — Industrial Minerals in British Columbia — New Developments, New Discoveries and New Opportunities, by Z.D. Hora, Vol. 83, No. 933, P74-78, Jan. 90.

**Mineralization** — The Lakeshore Porphyry Copper Deposit, Pinal County, Arizona: Geologic Setting and Physical Controls of Mineralization, by H.L.O. Huyck, Vol. 83, No. 937, P77-88, May 90.

- Mineralogical Examination of Gold-bearing Samples, by N.J. Cook, Vol. 83, No. 944, P51-55, Dec. 90.

**Mineralogical Evaluation** — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.

**Mineralogical Examination** — Mineralogical Examination of Gold-bearing Samples, by N.J. Cook, Vol. 83, No. 944, P51-55, Dec. 90.

**Minéraux Industriels** — Les revêtements céramiques: procédés actuels et futurs développements, par S. Dallaire, Vol. 83, No. 941, P93-101, Sept. 90.

- L'exploration et la mise en valeur des minéraux industriels dans la province de Grenville, Québec, dans les années 80, par H.-L. Jacob et S. Nantel, Vol. 83, No. 934, P84-91, Feb. 90.
- Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.

**Mining Innovation** — CANMET - University Programs in Mining Innovation, by N. Billette, R. Sage, M.D. Everell and G. Herget, Vol. 83, No. 937, P89-91, May 90.

**Mining Machinery** — Machine Mining of Narrow, Hardrock Orebodies, by M. Scoble, R. Dimitrakopoulos, J. Peck and F. Brackenbusch, Vol. 83, No. 935, P105-112, Mar. 90.

**Mining Methods** — Alimak Narrow Vein Mining at the Dome Mine, by B.E. Robertson, J.T. Vehkala and S.S. Kerr, Vol. 83, No. 938, P63-66, June 90.

**Mining Technology** — Control of Sodium-rich Brine Inflows at Central Canada Potash — Part 1: Rehabilitation, Diamond Drilling, Grouting and Backfilling, by A.M. Coode and E.M. De Souza, Vol. 83, No. 941, P81-86, Sept. 90.

- Control of Sodium-Rich Brine Inflows at Central Canada Potash — Part 2: Rock Mechanics, Instrumentation and Results, by E.M. De Souza and A.M. Coode, Vol. 83, No. 941, P87-92, Sept. 90.

**Mobile Stackers** — Stacking of Potash Mill Tailings, by G.A. Maki, R.G. Roden and P.J. Fullman, Vol. 83, No. 939, P96-98, July 90.

**Modelling** — A Blast Design Model Using the Inherent Fragmentation of a Rock Mass, by Brian C. Maynard, Vol. 83, No. 940, P71-77, Aug. 90.

**Monahans, C.C.** — Corrosion Survey of Steel H-piles Supporting a Small Craft Harbours Wharf in Trepassey, Newfoundland, by R.M. Hopkins and C.C. Monahan, Vol. 83, No. 935, P155-161, Mar. 90.

**Moon, P.** — Supervisors — Their Selection and Development, by L.G. Campbell and P. Moon, Vol. 83, No. 944, P56-59, Dec. 90.

**Morris, J.R.** — Planning of Mine Hoisting Systems, by J.R. Morris, Vol. 83, No. 942, P47-54, Oct. 90.

**Mount Wright Concentrator** — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.

**Mouska Project** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

**Mugford, J.C.** — Fracture Characterization in Granite Using Ground Probing Radar, by Arthur L. Holloway and James C. Mugford, Vol. 83, No. 940, P61-70, Aug. 90.

## N

**NLS Burner** — TransAlta's Low NO<sub>x</sub>/SO<sub>x</sub> Burner, by G.D. Bateson, Vol. 83, No. 944, P29-32, Dec. 90.

**Nantel, S.** — L'exploration et la mise en valeur des minéraux industriels dans la province de Grenville, Québec, dans les années 80, par H.-L. Jacob et S. Nantel, Vol. 83, No. 934, P84-91, Feb. 90.

**Narrow Vein Mining** — Alimak Narrow Vein Mining at the Dome Mine, by B.E. Robertson, J.T. Vehkala and S.S. Kerr, Vol. 83, No. 938, P63-66, June 90.

**Neale, T.** — Gold Exploration Success Along Structural Trends in the Sicker Group of Vancouver Island, British Columbia, by J.S. Get-singer, T. Neale, K.D. Lund and G.R. Cope, Vol. 83, No. 935, P125-136, Mar. 90.

**Nepheline** — New Industrial Mineral Opportunities in Southeastern Ontario, by P.W. Kingston, A. MacKinnon and W.F. Caley, Vol. 83, No. 934, P92-100, Feb. 90.

**New Brunswick Appalachians** — Epigenetic Gold Deposits and Their Tectonic Setting in the New Brunswick Appalachians, by A.A. Ruitenberg, S.C. Johnson and L.R. Fyffe, Vol. 83, No. 934, P43-55, Feb. 90.

**NiGOLD** — Value Added Products, by J.A.E. Bell, Vol. 83, No. 933, P67-73, Jan. 90.

**Nickel Sulfide Fire-Assay** — La détermination des EGP dans les roches: revue des techniques analytiques basées sur l'utilisation de la fusion plombeuse et de la fusion au sulfure de nickel, par M. Bergeron, Vol. 83, No. 936, P108-113, Apr. 90.

**Niobec Mine** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

**Non-destructive Testing** — How Accurate are Non-destructive-testing Based Estimates of Mine Shaft Rope Breaking-strength Losses? — an Update, by L.B. Geller and J.E. Udd, Vol. 83, No. 944, P47-50, Dec. 90.

## O

**Oil Sands** — AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.

**Oilsands** — Research and Maintenance Engineering Support to the Syncrude Mining Operation, by D. Kershaw, Vol. 83, No. 942, P55-60, Oct. 90.

**Open Pit Mining** — Open Pit Mine — Les Mines Selbaie, by C. Pageau and D. Caron, Vol. 83, No. 936, P88-93, Apr. 90.

- Performance Improvement at the Bell Mine, by M.C. Ethier and A.L. Laramie, Vol. 83, No. 939, P79-83, July 90.
- The Future of AC Static Drive Systems on Open Cast Mining Machinery, by T.W. Sullivan, Vol. 83, No. 939, P84-88, July 90.
- Balmer's In-pit Coal Conveyor: Improving Haulage Efficiency, C.H. van Eendenburg, Vol. 83, No. 939, P99-102, July 90.
- The Use of Rock Drains in Surface Mine Waste Dumps, by B.M. Das, F. Claridge and V.K. Garga, Vol. 83, No. 940, P78-83, Oct. 90.
- The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

*Operating Techniques* — Liner Designs, Materials and Operating Practices for Large Primary Mills, by J.L. Parks and D.M. Kjos, Vol. 83, No. 943, P84-89, Nov. 90.

*Operations souterraines* — Sélection optimale des quantités d'explosifs basée sur des contraintes de production et un résultat d'analyse de régression multiple, par M. Laflamme et J.L. Collins, Vol. 83, No. 937, P68-72, May 90.

*Ore Reserve Estimations* — Computer-based Reserve Estimation and Grade Control: Practitioners' Views, by N. Champigny and P.H. Grimley, Vol. 83, No. 942, P75-77, Oct. 90.

*Ore Reserves* — Valuation of Mineral Properties which do not Contain Exploitable Reserves, by L.C. Kilburn, Vol. 83, No. 940, P90-93, Aug. 90.

*Ore Transport* — Coal Slurry Pipeline Flow: a Review of Transport Options, by C.A. Shook, R.G. Gillies and W.H.W. Husband, Vol. 83, No. 942, P84-89, Oct. 90.

## P

*P.T. Inco (Indonesia)* — P.T. Inco (Indonesia) Plant Expansion, by M.C. Bell and W.P. Clement, Vol. 83, No. 933, P57-59, Jan. 90.

*Pageau, C.* — Open Pit Mine — Les Mines Selbaie, by C. Pageau and D. Caron, Vol. 83, No. 936, P88-93, Apr. 90.

*Paradis, S.* — Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.

*Parks, J.L.* — Liner Designs, Materials and Operating Practices for Large Primary Mills, by J.L. Parks and D.M. Kjos, Vol. 83, No. 943, P84-89, Nov. 90.

*Pascalis Mine* — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

*Peck, J.* — Machine Mining of Narrow, Hardrock Orebodies, by M. Scoble, R. Dimitrakopoulos, J. Peck and F. Brackenbusch, Vol. 83, No. 935, P105-112, Mar. 90.

*Pender, R.* — Maintenance Management Control Through Utilization of a Computerized System at the Key Lake Project, by T. Warren and R. Pender, Vol. 83, No. 942, P67-71, Oct. 90.

*Perry, R.J.* — The Application of High Density Paste Backfill at Dome Mine, by R.J. Perry and D.L. Churcher, Vol. 83, No. 937, P53-58, May 90.

*Petruck, W.* — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruck and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.

*Pettipas, A.R.* — Interpretation of Second Derivative Aeronagnetic Maps at the Silver Queen and Equity Silver Mines, Houston, B.C., by B.N. Church and A.R. Pettipas, Vol. 83, No. 934, P69-76, Feb. 90.

*Phalen Colliery* — Phalen Colliery: Production and Productivity, by G.R. White, Vol. 83, No. 940, P81-84, Aug. 90.

*Phosphate Deposits* — Geostatistical Evaluation of the Abu Tartur Phosphate Deposit, Western Desert, Egypt, by A. Sahin and A.A. Abdul-Latif, Vol. 83, No. 934, P56-61, Feb. 90.

*Pierre Beauchemin Mine* — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.

*Pipeline Transportation* — Coal Slurry Pipeline Flow: a Review of Transport Options, by C.A. Shook, R.G. Gillies and W.H.W. Husband, Vol. 83, No. 942, P84-89, Oct. 90.

*Plant Design* — P.T. Inco (Indonesia) Plant Expansion, by M.C. Bell and W.P. Clement, Vol. 83, No. 933, P57-59, Jan. 90.

*Plant Management* — People, Quality and Processing Improvement, by L.M. Ames and W.D. Harwood, Vol. 83, No. 933, P51-56, Jan. 90.

*Plant Production* — P.T. Inco (Indonesia) Plant Expansion, by M.C. Bell and W.P. Clement, Vol. 83, No. 933, P57-59, Jan. 90.

*Platinum Group Elements* — La détermination des EGP dans les roches: revue des techniques analytiques basées sur l'utilisation de la fusion plombeuse et de la fusion au sulfure de nickel, par M. Bergeron, Vol. 83, No. 936, P108-113, Apr. 90.

*Polymers* — The Wear of Materials Sliding Against Road Surfaces, by M. Fiset and D. Belley, Vol. 83, No. 941, P111-115, Sept. 90.

*Potash* — Stacking of Potash Mill Tailings, by G.A. Maki, R.G. Roden and P.J. Fullman, Vol. 83, No. 939, P96-98, July 90.

*Precious Metals* — Precious Metals Losses in Pyrometallurgical Processing, by J.W. Matousek and J.G. Whellock, Vol. 83, No. 933, P97-101, Jan. 90.

*Process Control* — People, Quality and Processing Improvement, by L.M. Ames and W.D. Harwood, Vol. 83, No. 933, P51-56, Jan. 90.

*Production* — Cannon Mine's B-Neath Zone — Exploration Through Production, by J.J. Baz-Dresch, Vol. 83, No. 938, P43-48, June 90.

— Use of Microscope in Narrow Stope Mining, by F. Lambert, Vol. 83, No. 938, P49-52, June 90.

*Productivity* — Alimak Narrow Vein Mining at the Dome Mine, by B.E. Robertson, J.T. Vehkala and S.S. Kerr, Vol. 83, No. 938, P63-66, June 90.

*Province de Grenville* — L'exploration et la mise en valeur des minéraux industriels dans la province de Grenville, Québec, dans les années 80, par H.-L. Jacob et S. Nantel, Vol. 83, No. 934, P84-91, Feb. 90.

— Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.

*Pyrometallurgy* — Precious Metals Losses in Pyrometallurgical Processing, by J.W. Matousek and J.G. Whellock, Vol. 83, No. 933, P97-101, Jan. 90.

## Q

*Quesnel, W.* — Application of Longhole Drilling Methods for Narrow Vein Mining, by P. Larsen, R. Cyr and W. Quesnel, Vol. 83, No. 937, P35-40, May 90.

## R

*Radar Reflection* — Fracture Characterization in Granite Using Ground Probing Radar, by Arthur L. Holloway and James C. Mugford, Vol. 83, No. 940, P61-70, Aug. 90.

*Refractory Design* — RH Vacuum Degassing — Operating Experience and Refractory Design, by B.H. Baker and B.P. Schrader, Vol. 83, No. 938, P85-89, June 90.

*Refractory Metallurgy* — Ceramics for the Continuous Casting of Small Cross Section Products, by A.J. Rigby, N.A. McPherson and P.C. Stevens, Vol. 83, No. 938, P81-84, June 90.

*Regression Analyses* — Sélection optimale des quantités d'explosifs basée sur des contraintes de production et un résultat d'analyse de régression multiple, par M. Laflamme et J.L. Collins, Vol. 83, No. 937, P68-72, May 90.

*Research and Development* — Value Added Products, by J.A.E. Bell, Vol. 83, No. 933, P67-73, Jan. 90.

— Mine Roof Bolt Load Determinations Utilizing Ultrasonic Measurement Systems, by S.C. Tadolini, Vol. 83, No. 940, P49-54, Aug. 90.

— Research and Maintenance Engineering Support to the Syncrude Mining Operation, by D. Kershaw, Vol. 83, No. 942, P55-60, Oct. 90.

*Rice Lake Greenstone Belt* — Variation of Gold Content with Depth in the San Antonio Gold Mine, by B.H. Whiting and A.J. Sinclair, Vol. 83, No. 941, P43-46, Sept. 90.

*Rider, J.E.* — Better Maintenance of Belt Conveyors Through Good Design, by D.A. Mackie and J.E. Rider, Vol. 83, No. 942, P61-64, Oct. 90.

*Rigby, A.J.* — Ceramics for the Continuous Casting of Small Cross Section Products, by A.J. Rigby, N.A. McPherson and P.C. Stevens, Vol. 83, No. 938, P81-84, June 90.

*Roadheaders* — Roadheader Excavation in Consolidated Rockfill at Kidd Creek Mines, by V.C. Wittchen, J.E. Croxall and T.R. Yu, Vol. 83, No. 937, P41-45, May 90.

*Robertson, B.E.* — Alimak Narrow Vein Mining at the Dome Mine, by B.E. Robertson, J.T. Vehkala and S.S. Kerr, Vol. 83, No. 938, P63-66, June 90.

*Robotics* — CCARM's Research on Mining Simulators and Their Role in Maintenance and Training, by J.B. Edwards, Vol. 83, No. 933, P79-86, Jan. 90.

— Maintenance Improvements and Innovations at Noranda Minerals, by J.C. Bélanger and D.W.I. Griffiths, Vol. 83, No. 942, P65-66, Oct. 90.

*Rock Bolting* — Feasibility of Long-term Ground Control with Stainless Steel Friction Rock Bolts, by P.K. Kaiser, S.M. Maloney and S.P. Singh, Vol. 83, No. 940, P55-60, Aug. 90.

*Rock Drains* — The Use of Rock Drains in Surface Mine Waste Dumps, by B.M. Das, F. Claridge and V.K. Garga, Vol. 83, No. 940, P78-83, Oct. 90.

*Rock Mechanics* — Rapid Graphical Analysis of Rock Slopes, by D.M. Cruden, Vol. 83, No. 937, P73-76, May 90.

- Mine Roof Bolt Load Determinations Utilizing Ultrasonic Measurement Systems, by S.C. Tadolini, Vol. 83, No. 940, P49-54, Aug. 90.
- Feasibility of Long-term Ground Control with Stainless Steel Friction Rock Bolts, by P.K. Kaiser, S.M. Maloney and S.P. Singh, Vol. 83, No. 940, P55-60, Aug. 90.
- Fracture Characterization in Granite Using Ground Probing Radar, by Arthur L. Holloway and James C. Mugford, Vol. 83, No. 940, P61-70, Aug. 90.
- A Blast Design Model Using the Inherent Fragmentation of a Rock Mass, by Brian C. Maynard, Vol. 83, No. 940, P71-77, Aug. 90.
- Control of Sodium-rich Brine Inflows at Central Canada Potash — Part 1: Rehabilitation, Diamond Drilling, Grouting and Backfilling, by A.M. Coode and E.M. De Souza, Vol. 83, No. 941, P81-86, Sept. 90.
- Control of Sodium-Rich Brine Inflows at Central Canada Potash — Part 2: Rock Mechanics, Instrumentation and Results, by E.M. De Souza and A.M. Coode, Vol. 83, No. 941, P87-92, Sept. 90.
- Rockfill** — Roadheader Excavation in Consolidated Rockfill at Kidd Creek Mines, by V.C. Wittchen, J.E. Croxall and T.R. Yu, Vol. 83, No. 937, P41-45, May 90.
- Roden**, R.G. — Stacking of Potash Mill Tailings, by G.A. Maki, R.G. Roden and P.J. Fullman, Vol. 83, No. 939, P96-98, July 90.
- Roof Bolting** — Mine Roof Bolt Load Determinations Utilizing Ultrasonic Measurement Systems, by S.C. Tadolini, Vol. 83, No. 940, P49-54, Aug. 90.
- Rouyn-Noranda** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.
- Ruitenberg, A.A.** — Epigenetic Gold Deposits and Their Tectonic Setting in the New Brunswick Appalachians, by A.A. Ruitenberg, S.C. Johnson and L.R. Fyffe, Vol. 83, No. 934, P43-55, Feb. 90.

## S

- Safety** — Computerized Fire Monitoring, Criteria, Techniques and Experience at Inco Limited, by J.S. Stachulak, Vol. 83, No. 937, P59-67, May 90.
- Improving Mine Safety Through Perimeter Blasting at Inco Limited's Thompson T-3 Mine, by M. Sutherland, Vol. 83, No. 940, P45-48, Aug. 90.
- Planning of Mine Hoisting Systems, by J.R. Morris, Vol. 83, No. 942, P47-54, Oct. 90.
- Safety and Health in the Canadian Mine Environment—an Overview of Ventilation, Dust, Radiation and Diesel Emission Research, by M.G. Grenier and S.G. Hardcastle, Vol. 83, No. 944, P41-46, Dec. 90.
- Sage, R.** — CANMET — University Programs in Mining Innovation, by N. Billette, R. Sage, M.D. Everell and G. Herget, Vol. 83, No. 937, P89-91, May 90.
- Sahin, A.** — Geostatistical Evaluation of the Abu Tartur Phosphate Deposit, Western Desert, Egypt, by A. Sahin and A.A. Abdul-Latif, Vol. 83, No. 934, P56-61, Feb. 90.
- Salmon River Basin** — Paleo-geomorphology in the Exploration for Undiscovered Sandstone-lead Deposits, Salmon River Basin, Nova Scotia, by D.F. Sangster and P.D. Vaillancourt, Vol. 83, No. 934, P62-68, Feb. 90.
- San Antonio Gold Mine** — Variation of Gold Content with Depth in the San Antonio Gold Mine, by B.H. Whiting and A.J. Sinclair, Vol. 83, No. 941, P43-46, Sept. 90.
- Sandstone-lead Deposits** — Paleo-geomorphology in the Exploration for Undiscovered Sandstone-lead Deposits, Salmon River Basin, Nova Scotia, by D.F. Sangster and P.D. Vaillancourt, Vol. 83, No. 934, P62-68, Feb. 90.
- Sangster, D.F.** — Paleo-geomorphology in the Exploration for Undiscovered Sandstone-lead Deposits, Salmon River Basin, Nova Scotia, by D.F. Sangster and P.D. Vaillancourt, Vol. 83, No. 934, P62-68, Feb. 90.
- Scanline Survey** — A Blast Design Model Using the Inherent Fragmentation of a Rock Mass, by Brian C. Maynard, Vol. 83, No. 940, P71-77, Aug. 90.
- Schrader, B.P.** — RH Vacuum Degassing—Operating Experience and Refractory Design, by B.H. Baker and B.P. Schrader, Vol. 83, No. 938, P85-89, June 90.
- Scoble, M.** — Machine Mining of Narrow, Hardrock Orebodies, by M. Scoble, R. Dimitrakopoulos, J. Peck and F. Brackenbusch, Vol. 83, No. 935, P105-112, Mar. 90.
- Selbaie** — Engineering—Les Mines Selbaie, by A.J.W. Law, Vol. 83, No. 936, P77-78, Apr. 90.
- Underground Mining—Les Mines Selbaie, by Y. Fourmanoit, Vol. 83, No. 936, P83-87, Apr. 90.
- Open Pit Mine—Les Mines Selbaie, by C. Pageau and D. Caron, Vol. 83, No. 936, P88-93, Apr. 90.
- Concentrator Development and Operation, by K. Wood and L. Duval, Vol. 83, No. 936, P94-100, Apr. 90.
- Equipment Maintenance—Les Mines Selbaie, by G. Bégin, Vol. 83, No. 936, P101-104, Apr. 90.
- Organization of Administrative and Technical Services—Les Mines Selbaie, by R.C. Bryce, Vol. 83, No. 936, P105-107, Apr. 90.
- Geology—Les Mines Selbaie, by J.J. Bouillon, Vol. 83, No. 936, P79-82, Apr. 90.
- Settling Ponds** — Stacking of Potash Mill Tailings, by G.A. Maki, R.G. Roden and P.J. Fullman, Vol. 83, No. 939, P96-98, July 90.
- Shaft Design** — Planning of Mine Hoisting Systems, by J.R. Morris, Vol. 83, No. 942, P47-54, Oct. 90.
- Shaft Ropes** — How Accurate are Non-destructive-testing Based Estimates of Mine Shaft Rope Breaking-strength Losses?—an Update, by L.B. Geller and J.E. Udd, Vol. 83, No. 944, P47-50, Dec. 90.
- Shook, C.A.** — Coal Slurry Pipeline Flow: a Review of Transport Options, by C.A. Shook, R.G. Gillies and W.H.W. Husband, Vol. 83, No. 942, P84-89, Oct. 90.
- Sicker Group** — Gold Exploration Success Along Structural Trends in the Sicker Group of Vancouver Island, British Columbia, by J.S. Getsinger, T. Neale, K.D. Lund and G.R. Cope, Vol. 83, No. 935, P125-136, Mar. 90.
- Sigma-2 Gold Mine** — Kinematic Analysis of Auriferous Veins at the Sigma-2 Gold Mine, Louvicourt Township, Quebec, by C. Giguère and J. Beiland, Vol. 83, No. 941, P47-52, Sept. 90.
- Silidur** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonnault, Vol. 83, No. 943, P48-75, Nov. 90.
- Silver** — Geology—Les Mines Selbaie, by J.J. Bouillon, Vol. 83, No. 936, P79-82, Apr. 90.
- Silver Deposits** — From Nickel to Gold, by R. Voisey and R.J. Spencer, Vol. 83, No. 943, P90-96, Nov. 90.
- Simandl, G.J.** — Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.
- Sinclair, A.J.** — Variation of Gold Content with Depth in the San Antonio Gold Mine, by B.H. Whiting and A.J. Sinclair, Vol. 83, No. 941, P43-46, Sept. 90.
- Singh, S.P.** — Feasibility of Long-term Ground Control with Stainless Steel Friction Rock Bolts, by P.K. Kaiser, S.M. Maloney and S.P. Singh, Vol. 83, No. 940, P55-60, Aug. 90.
- Sirois, L.L.** — Acid Mine Drainage Research in Canada, by M.P. Filion, L.L. Sirois and K. Ferguson, Vol. 83, No. 944, P33-40, Dec. 90.
- Slope Analysis** — Rapid Graphical Analysis of Rock Slopes, by D.M. Cruden, Vol. 83, No. 937, P73-76, May 90.
- Sludge Disposal** — Tailings Engineering at Syncrude, by L.T. Yano and G.T. Handford, Vol. 83, No. 939, P89-91, July 90.
- Smelting Operations** — P.T. Inco (Indonesia) Plant Expansion, by M.C. Bell and W.P. Clement, Vol. 83, No. 933, P57-59, Jan. 90.
- Smelting Processes** — Precious Metals Losses in Pyrometallurgical Processing, by J.W. Matousek and J.G. Whellock, Vol. 83, No. 933, P97-101, Jan. 90.
- Smith, L.D.** — Author's Reply, L.D. Smith's response to paper by M.M. Hajdasiński, Vol. 83, No. 935, P146, Mar. 90.
- Sopher, S.** — Inco Gold—Exploration and Development, by C. Barsotti and S. Sopher, Vol. 83, No. 933, P60-66, Jan. 90.
- Spencer, R.J.** — From Nickel to Gold, by R. Voisey and R.J. Spencer, Vol. 83, No. 943, P90-96, Nov. 90.
- Spiral Circuit** — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.
- Stachulak, J.S.** — Computerized Fire Monitoring, Criteria, Techniques and Experience at Inco Limited, by J.S. Stachulak, Vol. 83, No. 937, P59-67, May 90.
- Static Drive Systems** — The Future of AC Static Drive Systems on Open Cast Mining Machinery, by T.W. Sullivan, Vol. 83, No. 939, P84-88, July 90.
- Steel** — An Electrochemical Criterion for Galvanic Protection of Steel Exposed to Marine Environments, by B.E. Wilde, Vol. 83, No. 935, P162-164, Mar. 90.
- The Wear of Materials Sliding Against Road Surfaces, by M. Fiset and D. Belley, Vol. 83, No. 941, P111-115, Sept. 90.
- Overview of Markets and Trends in Steel, by G.R. Heffernan, Vol. 83, No. 942, P97-99, Oct. 90.
- Stein, R.B.** — Calculate Countercurrent Washing Efficiency with Dirty Wash Solution, by R.B. Stein, Vol. 83, No. 944, P68-72, Dec. 90.
- Stevens, P.C.** — Ceramics for the Continuous Casting of Small Cross Section Products, by A.J. Rigby, N.A. McPherson and P.C. Stevens, Vol. 83, No. 938, P81-84, June 90.

**Storer, D.K.** — Experience with a new K<sup>40</sup> System at PCS Mining, Lanigan Division, by D.K. Storer, W. Lee and S. Tkach, Vol. 83, No. 938, P59-62, June 90.

**Sullivan, T.W.** — The Future of AC Static Drive Systems on Open Cast Mining Machinery, by T.W. Sullivan, Vol. 83, No. 939, P84-88, July 90.

**Sulphide Deposits** — Late Precambrian-Early Paleozoic Volcanic Regimes and Associated Massive Sulphide Deposits in the Northeastern Mainland Appalachians, by L.R. Fyffe, C.R. van Staal and J.A. Winchester, Vol. 83, No. 938, P70-78, June 90.

**Sulphur Dioxide Emissions** — The SO<sub>2</sub> Abatement Project, by M.C. Bell, J.A. Blanco, H. Davies and P. Garritsen, Vol. 83, No. 933, P47-50, Jan. 90.

**Support Systems** — The Application of High Density Paste Backfill at Dome Mine, by R.J. Perry and D.L. Churcher, Vol. 83, No. 937, P53-58, May 90.

**Surface Engineering** — Stacking of Potash Mill Tailings, by G.A. Maki, R.G. Roden and P.J. Fullman, Vol. 83, No. 939, P96-98, July 90.

**Surface Mining** — The Use of Rock Drains in Surface Mine Waste Dumps, by B.M. Das, F. Claridge and V.K. Garga, Vol. 83, No. 940, P78-83, Oct. 90.

**Sutherland, M.** — Improving Mine Safety Through Perimeter Blasting at Inco Limited's Thompson T-3 Mine, by M. Sutherland, Vol. 83, No. 940, P45-48, Aug. 90.

**Sutphin, D.M.** — Disseminated Flake Graphite and Amorphous Graphite Deposit Types: an Analysis Using Grade and Tonnage Models, by D.M. Sutphin and J.D. Bliss, Vol. 83, No. 940, P85-89, Aug. 90.

**Sydney Coal Field** — Phalen Colliery: Production and Productivity, by G.R. White, Vol. 83, No. 940, P81-84, Aug. 90.

**Syn crude Canada Ltd.** — Research and Maintenance Engineering Support to the Syncrude Mining Operation, by D. Kershaw, Vol. 83, No. 942, P55-60, Oct. 90.

## T

**Tadolini, S.C.** — Mine Roof Bolt Load Determinations Utilizing Ultrasonic Measurement Systems, by S.C. Tadolini, Vol. 83, No. 940, P49-54, Aug. 90.

**Tailings Disposal Systems** — Stacking of Potash Mill Tailings, by G.A. Maki, R.G. Roden and P.J. Fullman, Vol. 83, No. 939, P96-98, July 90.

**Tailings Engineering** — Tailings Engineering at Syncrude, by L.T. Yano and G.T. Handford, Vol. 83, No. 939, P89-91, July 90.

**Technology** — The Future of AC Static Drive Systems on Open Cast Mining Machinery, by T.W. Sullivan, Vol. 83, No. 939, P84-88, July 90.

— Control of Sodium-Rich Brine Inflows at Central Canada Potash — Part 2: Rock Mechanics, Instrumentation and Results, by E.M. De Souza and A.M. Coode, Vol. 83, No. 941, P87-92, Sept. 90.

— TransAlta's Low NO<sub>x</sub>/SO<sub>x</sub> Burner, by G.D. Bateson, Vol. 83, No. 944, P29-32, Dec. 90.

**Technology Development** — Les revêtements céramiques: procédés actuels et futurs développements, par S. Dallaire, Vol. 83, No. 941, P93-101, Sept. 90.

**Thermal Imaging** — Loose Rock Detection with Infrared Thermography, by T.R. Yu, J.G. Henning and J.E. Croxall, Vol. 83, No. 937, P46-52, May 90.

**Thompson T-3 Mine** — Improving Mine Safety Through Perimeter Blasting at Inco Limited's Thompson T-3 Mine, by M. Sutherland, Vol. 83, No. 940, P45-48, Aug. 90.

**Tkach, S.** — Experience with a new K<sup>40</sup> System at PCS Mining, Lanigan Division, by D.K. Storer, W. Lee and S. Tkach, Vol. 83, No. 938, P59-62, June 90.

## U

**Udd, J.E.** — How Accurate are Non-destructive-testing Based Estimates of Mine Shaft Rope Breaking Strength Losses? — an Update, by L.B. Geller and J.E. Udd, Vol. 83, No. 944, P47-50, Dec. 90.

**Ultrasonic Technology** — Mine Roof Bolt Load Determinations Utilizing Ultrasonic Measurement Systems, by S.C. Tadolini, Vol. 83, No. 940, P9-54, Aug. 90.

**Underground Mining** — Underground Mining — Les Mines Selbaie, by Y. Fourmanoit, Vol. 83, No. 936, P83-87, Apr. 90.

— Application of Longhole Drilling Methods for Narrow Vein Mining, by P. Larsen, R. Cyr and W. Quesnel, Vol. 83, No. 937, P35-40, May 90.

— Roadheader Excavation in Consolidated Rockfill at Kidd Creek Mines, by V.C. Wittchen, J.E. Croxall and T.R. Yu, Vol. 83, No. 937, P41-45, May 90.

— Loose Rock Detection with Infrared Thermography, by T.R. Yu, J.G. Henning and J.E. Croxall, Vol. 83, No. 937, P46-52, May 90.

— The Application of High Density Paste Backfill at Dome Mine, by R.J. Perry and D.L. Churcher, Vol. 83, No. 937, P53-58, May 90.

— Computerized Fire Monitoring, Criteria, Techniques and Experience at Inco Limited, by J.S. Stachulak, Vol. 83, No. 937, P59-67, May 90.

— Cannon Mine's B-Neath Zone — Exploration Through Production, by J.J. Baz-Dresch, Vol. 83, No. 938, P43-48, June 90.

— Use of Microscoop in Narrow Stope Mining, by F. Lambert, Vol. 83, No. 938, P49-52, June 90.

— Improving Mine Safety Through Perimeter Blasting at Inco Limited's Thompson T-3 Mine, by M. Sutherland, Vol. 83, No. 940, P45-48, Aug. 90.

— The Apex Mine: a Case Study in Small Scale Underground Mining, by R.W. Guill, Vol. 83, No. 942, P72-74, Oct. 90.

— The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonault, Vol. 83, No. 943, P48-75, Nov. 90.

**Underground Research Laboratory (URL)** — Fracture Characterization in Granite Using Ground Probing Radar, by Arthur L. Holloway and James C. Mugford, Vol. 83, No. 940, P61-70, Aug. 90.

**Underground Test Facilities** — AOSTRA Underground Test Facility: Progress and Potential, by J.A. Haston, R.W. Luhning and S.D. Gittins, Vol. 83, No. 938, P53-58, June 90.

**Uribe-Salas, A.** — A Calibration Probe for Level Detection Systems in Flotation Columns, by C.O. Gomez, A. Uribe-Salas, J.A. Finch and B.J. Huls, Vol. 83, No. 935, P118-121, Mar. 90.

## V

**Vacuum Degassing** — RH Vacuum Degassing — Operating Experience and Refractory Design, by B.H. Baker and B.P. Schrader, Vol. 83, No. 938, P85-89, June 90.

**Vaillancourt, P.D.** — Paleo-geomorphology in the Exploration for Undiscovered Sandstone-lead Deposits, Salmon River Basin, Nova Scotia, by D.F. Sangster and P.D. Vaillancourt, Vol. 83, No. 934, P62-68, Feb. 90.

**Val d'Or** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonault, Vol. 83, No. 943, P48-75, Nov. 90.

**Valdez Creek** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonault, Vol. 83, No. 943, P48-75, Nov. 90.

**Valiquette, G.** — Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.

**van Eendenburg, C.H.** — Balmér's In-pit Coal Conveyor: Improving Haulage Efficiency, C.H. van Eendenburg, Vol. 83, No. 939, P99-102, July 90.

**van Staal, C.R.** — Late Precambrian-Early Paleozoic Volcanic Regimes and Associated Massive Sulphide Deposits in the Northeastern Mainland Appalachians, by L.R. Fyffe, C.R. van Staal and J.A. Winchester, Vol. 83, No. 938, P70-78, June 90.

**Vekhala, J.T.** — Alimak Narrow Vein Mining at the Dome Mine, by B.E. Robertson, J.T. Vekhala and S.S. Kerr, Vol. 83, No. 938, P63-66, June 90.

**Veillette, G.** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonault, Vol. 83, No. 943, P48-75, Nov. 90.

**Ventilation** — Safety and Health in the Canadian Mine Environment — an Overview of Ventilation, Dust, Radiation and Diesel Emission Research, by M.G. Grenier and S.G. Hardcastle, Vol. 83, No. 944, P41-46, Dec. 90.

**Vézina, R.** — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonault, Vol. 83, No. 943, P48-75, Nov. 90.

**Voisey, R.** — From Nickel to Gold, by R. Voisey and R.J. Spencer, Vol. 83, No. 943, P90-96, Nov. 90.

**Volcanic Geochemistry** — Late Precambrian-Early Paleozoic Volcanic Regimes and Associated Massive Sulphide Deposits in the Northeastern Mainland Appalachians, by L.R. Fyffe, C.R. van Staal and J.A. Winchester, Vol. 83, No. 938, P70-78, June 90.

## W

**Warren, T.** — Maintenance Management Control Through Utilization of a Computerized System at the Key Lake Project, by T. Warren and R. Pender, Vol. 83, No. 942, P67-71, Oct. 90.

**Wear Resistance** — The Wear of Materials Sliding Against Road Surfaces, by M. Fiset and D. Belley, Vol. 83, No. 941, P111-115, Sept. 90.

**Whellock, J.G.** — Precious Metals Losses in Pyrometallurgical Processing, by J.W. Matousek and J.G. Whellock, Vol. 83, No. 933, P97-101, Jan. 90.

*White, G.R.* — Phalen Colliery: Production and Productivity, by G.R. White, Vol. 83, No. 940, P81-84, Aug. 90.

*Whiting, B.H.* — Variation of Gold Content with Depth in the San Antonio Gold Mine, by B.H. Whiting and A.J. Sinclair, Vol. 83, No. 941, P43-46, Sept. 90.

*Wilde, B.E.* — An Electrochemical Criterion for Galvanic Protection of Steel Exposed to Marine Environments, by B.E. Wilde, Vol. 83, No. 935, P162-164, Mar. 90.

*Wilson, J.M.D.* — A Mineralogical Evaluation of the Spiral Circuit at the Mount Wright Concentrator by Image Analysis, by J.M.D. Wilson, W. Petruk and C. Coté, Vol. 83, No. 943, P76-83, Nov. 90.

*Winchester, J.A.* — Late Precambrian-Early Paleozoic Volcanic Regimes and Associated Massive Sulphide Deposits in the Northeastern Mainland Appalachians, by L.R. Fyffe, C.R. van Staal and J.A. Winchester, Vol. 83, No. 938, P70-78, June 90.

*Wittchen, V.C.* — Roadheader Excavation in Consolidated Rockfill at Kidd Creek Mines, by V.C. Wittchen, J.E. Croxall and T.R. Yu, Vol. 83, No. 937, P41-45, May 90.

*Wolff, L.A.* — Productivity: How do you Measure it?, by L.A. Wolff, Vol. 83, No. 935, P122-124, Mar. 90.

*Wollastonite* — New Industrial Mineral Opportunities in Southeastern Ontario, by P.W. Kingston, A. MacKinnon and W.F. Caley, Vol. 83, No. 934, P92-100, Feb. 90.

— Gîtes de wollastonite, province tectonique de Grenville, Québec, par G.J. Simandl, G. Valiquette, H.-L. Jacob et S. Paradis, Vol. 83, No. 934, P101-107, Feb. 90.

*Wood, K.* — Concentrator Development and Operation, by K. Wood and L. Duval, Vol. 83, No. 936, P94-100, Apr. 90.

## Y

*Yano, L.T.* — Tailings Engineering at Syncrude, by L.T. Yano and G.T. Handford, Vol. 83, No. 939, P89-91, July 90.

*Yu, T.R.* — Roadheader Excavation in Consolidated Rockfill at Kidd Creek Mines, by V.C. Wittchen, J.E. Croxall and T.R. Yu, Vol. 83, No. 937, P41-45, May 90.

— Loose Rock Detection with Infrared Thermography, by T.R. Yu, J.G. Henning and J.E. Croxall, Vol. 83, No. 937, P46-52, May 90.

*Yvan Vezina Mill* — The Cambior Story, by L.P. Gignac, R. Vézina, R. Leclerc, G. Veillette and J. Boissonault, Vol. 83, No. 943, P48-75, Nov. 90.

## Z

*Zinc* — Geology — Les Mines Selbaie, by J.J. Bouillon, Vol. 83, No. 936, P79-82, Apr. 90.

## Institute Activities

### A

*AOSTRA* — The Petroleum Society of CIM and AOSTRA 1991 Technical Conference, Vol. 83, No. 944, P12, Dec. 90.

*Ambrose, J.H.* — CIM Obituaries, Vol. 83, No. 939, P29, July 90.

*Anderson, A.C.* — CIM Obituaries, Vol. 83, No. 940, P24, Aug. 90.

*Andrews, S.J.* — CIM Obituaries, Vol. 83, No. 934, P36, Feb. 90.

*Annual General Meetings* — Ninety-second Annual General Meeting/92e congrès annuel, Vol. 83, No. 934, P11-24, Feb. 90.

— Ninety-second Annual General Meeting/92e congrès annuel, Program, Vol. 83, No. 935, P43-104, Mar. 90.

— Technical Program Update — 92nd Annual General Meeting, Vol. 83, No. 936, P53-65, Apr. 90.

— Ninety-third Annual General Meeting of CIM, Call for Papers/93e congrès annuel de l'ICM, appel aux conférenciers, Vol. 83, No. 939, P24, July 90.

— Nation's Capital Venue of the 92nd Annual General Meeting, Vol. 83, No. 940, P27-38, Aug. 90.

*Awards* — The Sherritt Hydrometallurgy Award, Call for Nominations, Vol. 83, No. 937, P98, May 90.

— John T. Ryan Safety Trophies, Vol. 83, No. 940, P39, Aug. 90.

— CIM Fellowship — Call for Nominations, Vol. 83, No. 942, P24, Oct. 90.

— Metal Mining Division Award — Call for Nominations, Vol. 83, No. 942, P25, Oct. 90.

— CIM/EMR Journalism Awards, 1990 — Call for Nominations, Vol. 83, No. 942, P26, Oct. 90.

— Julian Boldy Memorial Award, Vol. 83, No. 943, P26, Nov. 90.

— McParland Memorial Medal — Call for Nominations, Vol. 83, No. 944, P11, Dec. 90.

### B

*Barlow, Alfred Ernest* — Geological Society Newsletter, Vol. 83, No. 943, P24-26, Nov. 90.

*Base Metals* — Base Metal Symposium, Program, Vol. 83, No. 938, P24-28, June 90.

*Beavan, A.P.* — CIM Obituaries, Vol. 83, No. 935, P23-24, Mar. 90.

*Bérubé, E.E.* — CIM Obituaries, Vol. 83, No. 933, P40, Jan. 90.

*By-Laws* — Proposed By-Laws of The Canadian Institute of Mining, Metallurgy, and Petroleum, Vol. 83, No. 939, P65-71, July 90.

### C

*Canadian Mineral Processors* — Report on the 22nd Annual Canadian Mineral Processors Meeting, Vol. 83, No. 936, P16-17, Apr. 90.

— Twenty-third Annual Operators Conference of the Canadian Mineral Processors Division, Call for Papers, Vol. 83, No. 937, P12, May 90.

— Twenty-third CIM Canadian Mineral Processors Annual Operators Conference, Vol. 83, No. 943, P28-34, Nov. 90.

*Ceinture polymétallique* — Symposium ICM Rouyn-Noranda 1990 — La ceinture polymétallique du Nord-Ouest Québécois: 60 ans d'exploration minière/Northwest Quebec Polymetallic Belt: 60 Years of Mineral Exploration — Program, Vol. 83, No. 936, P26-39, Apr. 90.

*Coal Operators Conferences* — Fourth Coal Operators Conference Held in Tumbler Ridge, British Columbia — Report, Vol. 83, No. 934, P32, Feb. 90.

*Column Flotation* — International Conference on Column Flotation, Vol. 83, No. 936, P82, Apr. 90.

— Column '91/Colonne '91, Program, Vol. 83, No. 944, P13-19, Dec. 90.

*Concours* — Concours de journalisme de l'ICM/EMR 1990 — Appel de candidatures, Vol. 83, No. 942, P28, Oct. 90.

*Conférence des opérateurs de mines souterraines* — Tenth CIM Underground Operators Conference/10e conférence des opérateurs de mines souterraines de l'ICM — Call for Papers/appel aux conférenciers, Vol. 83, No. 934, P30, Feb. 90.

*Conference of Metallurgists* — Twenty-seventh Annual Conference of Metallurgists Symposia Proceedings, Vol. 83, No. 936, P72, Apr. 90.

— Twenty-ninth Annual Conference of Metallurgists, Call for Exhibitors, Vol. 83, No. 937, P97, May 90.

— Thirtieth Annual Conference of Metallurgists — Call for Papers, Vol. 83, No. 941, P109-110, Sept. 90.

*Conferences* — Geology Division 1991 Annual Field Conference on Mineral Deposits and Exploration Methods — Call for Papers, Vol. 83, No. 934, P30, Feb. 90.

— Tenth CIM Underground Operators Conference/10e conférence des opérateurs de mines souterraines de l'ICM — Call for Papers/appel aux conférenciers, Vol. 83, No. 934, P30, Feb. 90.

— Fourth Coal Operators Conference Held in Tumbler Ridge, British Columbia — Report, Vol. 83, No. 934, P32, Feb. 90.

— Program: Mineral Outlook Conference '90, Vol. 83, No. 935, P104, Mar. 90.

— Hydrometallurgists at Hamilton, Vol. 83, No. 934, P108, Feb. 90.

— Report on the 6th CIM Maintenance/Engineering Operators Conference, Vol. 83, No. 936, P11-13, Apr. 90.

— International Conference on Column Flotation, Vol. 83, No. 936, P82, Apr. 90.

— Twenty-third Annual Operators Conference of the Canadian Mineral Processors Division, Call for Papers, Vol. 83, No. 937, P12, May 90.

— International Symposium on Electrometallurgical Plant Practice (The 20th Annual Hydrometallurgical Meeting), Vol. 83, No. 940, P103-109, Aug. 90.

— Geological Society of CIM 1991 Annual Field Conference on Mineral Deposits and Exploration Methods — Call for Papers, Vol. 83, No. 942, P23, Oct. 90.

— Twenty-third CIM Canadian Mineral Processors Annual Operators Conference, Vol. 83, No. 943, P28-34, Nov. 90.

— Tenth Underground Operators Conference of CIM/10e conférence ICM des opérateurs de mines souterraines, Vol. 83, No. 943, P35-43, Nov. 90.

— The Petroleum Society of CIM and AOSTRA 1991 Technical Conference, Vol. 83, No. 944, P12, Dec. 90.

— Column '91/Colonne '91, Program, Vol. 83, No. 944, P13-19, Dec. 90.

**Congrès** — Ninety-second Annual General Meeting/92e congrès annuel, Vol. 83, No. 934, P11-24, Feb. 90.  
**Conventions** — New Brunswick Branch holds its 20th Annual Convention, Vol. 83, No. 933, P10-16, Jan. 90.

## D

**District 2 Meeting** — Septième réunion du district no 2/7th District 2 Meeting — Program, Vol. 83, No. 936, P44-52, Apr. 90.  
**District 4 Meeting** — Twelfth CIM District 4/Geology Division Meeting — Call for papers, Vol. 83, No. 933, P16, Jan. 90.  
— Twelfth District 4 Meeting, Program, Vol. 83, No. 939, P53-63, July 90.  
— Thunder Bay Meeting 'A Golden Experience', Vol. 83, No. 943, P21-23, Nov. 90.  
**District 5 Meeting** — Fourth District 5 Meeting a Huge Success, Vol. 83, No. 936, P14, Apr. 90.  
**District 6 Meeting** — Thirteenth CIM District 6 Meeting — Call for Papers, Vol. 83, No. 935, P21, Mar. 90.  
— Thirteenth Annual District 6 Meeting, Program, Vol. 83, No. 939, P40-52, July 90.  
— Kamloops District 6 Meeting Report, Vol. 83, No. 942, P14-19, Oct. 90.  
**District 1 Meeting** — Seventh District 1 Meeting and 37th Annual Meeting of the Newfoundland Branch, Vol. 83, No. 941, P28-32, Sept. 90.  
**Dues** — Notice of CIM Dues Increase, Vol. 83, No. 939, P21, July 90.

## E

**Education** — The CIM Education Committee's Survey of Graduates from Canadian Minerals Engineering and Technology Programs in 1989 and a Forward View, by J.E. Udd, Vol. 83, No. 938, P40, June 90.  
— CIM Student Essay Competition Winners, Vol. 83, No. 944, P21-22, Dec. 90.  
**Electrometallurgy** — Report on the International Symposium on Electrometallurgical Plant Practice, Vol. 83, No. 944, P64-65, Dec. 90.  
**Emergencies** — First International Symposium on Underground Sulphide Dust Explosions, Mine Fires, and Emergencies, Vol. 83, No. 938, P13, June 90.  
**Environmental Controls** — International Symposium on Environmental Controls in Metallurgical Industries, Vol. 83, No. 942, P95, Oct. 90.  
**Exhibitions** — CIM 13th District 6 Meeting Trade Show Exhibition — Call for Exhibitors, Vol. 83, No. 936, P20, Apr. 90.  
— Eighth Annual CIM Trade Exhibition — Call for Exhibitors, Vol. 83, No. 941, P14, Sept. 90.  
**Explosions** — First International Symposium on Underground Sulphide Dust Explosions, Mine Fires, and Emergencies, Vol. 83, No. 938, P13, June 90.

## F

**Farmer, R.H.** — CIM Obituaries, Vol. 83, No. 934, P36, Feb. 90.  
**Fellowship Awards** — CIM Fellowship — Call for Nominations, Vol. 83, No. 942, P24, Oct. 90.

## G

**Geological Society** — Geological Society of CIM 1991 Annual Field Conference on Mineral Deposits and Exploration Methods — Call for Papers, Vol. 83, No. 942, P23, Oct. 90.  
**Geology Division** — Twelfth CIM District 4/Geology Division Meeting — Call for Papers, Vol. 83, No. 933, P16, Jan. 90.  
— Geology Division 1991 Annual Field Conference on Mineral Deposits and Exploration Methods — Call for Papers, Vol. 83, No. 934, P30, Feb. 90.  
**Gibson, C.S.** — CIM Obituaries, Vol. 83, No. 935, P23-24, Mar. 90.  
**Grant, F.** — CIM Obituaries, Vol. 83, No. 942, P34-36, Oct. 90.  
**Grassmueck, G.** — CIM Obituaries, Vol. 83, No. 935, P23-24, Mar. 90.  
**Guidelines** — Guidelines for Authors of Technical Papers, Vol. 83, No. 933, P44, Jan. 90.

## H

**Harding, D.A.** — CIM Obituaries, Vol. 83, No. 938, P39, June 90.  
**Harrison, J.M.** — CIM Obituaries, Vol. 83, No. 942, P34-36, Oct. 90.  
**Hart, J.R.** — CIM Obituaries, Vol. 83, No. 933, P40, Jan. 90.  
**Historical Metallurgy Committee** — Note from the Chairman of the Historical Metallurgy Committee of CIM, Vol. 83, No. 936, P16, Apr. 90.  
**Houston, J.** — CIM Obituaries, Vol. 83, No. 933, P40, Jan. 90.  
**Hydrometallurgical Meeting** — International Symposium on Electrometallurgical Plant Practice, Vol. 83, No. 934, P109, Feb. 90.

— International Symposium on Electrometallurgical Plant Practice (The 20th Annual Hydrometallurgical Meeting), Vol. 83, No. 940, P103-109, Aug. 90.  
**Hydrometallurgical Society of CIM** — Report on the International Symposium on Electrometallurgical Plant Practice, Vol. 83, No. 944, P64-65, Dec. 90.

— The Ernest Peters International Symposium on Hydrometallurgy Theory and Practice, Vol. 83, No. 933, P73, Jan. 90.  
— The Ernest Peters International Symposium on Hydrometallurgy Theory and Practice, Call for Papers, Vol. 83, No. 937, P100, May 90.  
— International Symposium on Electrometallurgical Plant Practice (the 20th Annual Hydrometallurgical Meeting), Program, Vol. 83, No. 939, P124-130, July 90.

## I

**Index** — General Index, Vol. 83, No. 934, P115-130, Feb. 90.

## J

**John T. Ryan Trophies** — John T. Ryan Safety Trophies, Vol. 83, No. 940, P39, Aug. 90.  
**Journalism Awards** — CIM/EMR Journalism Awards, 1990 — Call for Nominations, Vol. 83, No. 942, P26, Oct. 90.  
**Julian Boldy Memorial Award** — Julian Boldy Memorial Award, Vol. 83, No. 943, P26, Nov. 90.

## K

**Kilgour, R.J.** — CIM Obituaries, Vol. 83, No. 941, P25, Sept. 90.  
**Kotila, L.W.** — CIM Obituaries, Vol. 83, No. 939, P29, July 90.

## L

**Light Metals** — International Symposium on Extraction, Refining an Fabrication of Light Metals, Vol. 83, No. 942, P96, Oct. 90.

## M

**Maintenance/Engineering Division** — Report on the 6th CIM Maintenance/Engineering Operators Conference, Vol. 83, No. 936, P11-13, Apr. 90.  
**Maintenance/Engineering Division Awards** — McParland Memorial Medal — Call for Nominations, Vol. 83, No. 944, P11, Dec. 90.  
**McCuaig, J.A.** — CIM Obituaries, Vol. 83, No. 941, P25, Sept. 90.  
**McLeod, G.H.** — CIM Obituaries, Vol. 83, No. 939, P29, July 90.  
**McNaughton, R.R.** — CIM Obituaries, Vol. 83, No. 936, P22, Apr. 90.  
**McParland Memorial Medal** — McParland Memorial Medal — Call for Nominations, Vol. 83, No. 944, P11, Dec. 90.

**Meetings** — Twelfth CIM District 4/Geology Division Meeting — Call for papers, Vol. 83, No. 933, P16, Jan. 90.  
— The Petroleum Society of CIM Engineers and The Society of Petroleum Plan International Joint Technical Meeting, Vol. 83, No. 934, P26, Feb. 90.  
— Thirteenth CIM District 6 Meeting — Call for Papers, Vol. 83, No. 935, P21, Mar. 90.  
— Ninety-second Annual General Meeting/92e congrès annuel, Program, Vol. 83, No. 935, P43-104, Mar. 90.  
— Fourth District 5 Meeting a Huge Success, Vol. 83, No. 936, P14, Apr. 90.  
— Report on the 22nd Annual Canadian Mineral Processors Meeting, Vol. 83, No. 936, P16-17, Apr. 90.  
— The Mining Society of Nova Scotia Holds its 24th Annual Fall Meeting, Vol. 83, No. 936, P18, Apr. 90.  
— CIM 13th District 6 Meeting Trade Show Exhibition — Call for Exhibitors, Vol. 83, No. 936, P20, Apr. 90.  
— Septième réunion du district no 2/7th District 2 Meeting — Program, Vol. 83, No. 936, P44-52, Apr. 90.  
— CIM/SPE International Technical Meeting, Vol. 83, No. 937, P12, May 90.  
— Thirteenth Annual District 6 Meeting, Program, Vol. 83, No. 939, P40-52, July 90.  
— Twelfth District 4 Meeting, Program, Vol. 83, No. 939, P53-63, July 90.  
— International Symposium on Electrometallurgical Plant Practice (the 20th Annual Hydrometallurgical Meeting), Program, Vol. 83, No. 939, P124-130, July 90.  
— Seventh District 1 Meeting and 37th Annual Meeting of the Newfoundland Branch, Vol. 83, No. 941, P28-32, Sept. 90.

- Kamloops District 6 Meeting Report, Vol. 83, No. 942, P14-19, Oct. 90.
- The 103rd Annual Meeting of The Mining Society of Nova Scotia, Vol. 83, No. 943, P12-20, Nov. 90.
- Thunder Bay Meeting 'A Golden Experience', Vol. 83, No. 943, P21-23, Nov. 90.

**Metal Mining Division Award** — Metal Mining Division Award — Call for Nominations, Vol. 83, No. 942, P25, Oct. 90.

**Metallurgical Industries** — International Symposium on Environmental Controls in Metallurgical Industries, Vol. 83, No. 942, P95, Oct. 90.

**Metallurgical Society** — Call for Nominations for the 2nd Vice-President of The Metallurgical Society, Vol. 83, No. 944, P61, Dec. 90.

**Mine Fires** — First International Symposium on Underground Sulphide Dust Explosions, Mine Fires, and Emergencies, Vol. 83, No. 938, P13, June 90.

**Mineral Economics** — Sixth Mineral Economics Symposium — Program, Vol. 83, No. 944, P25-28, Dec. 90.

**Mining Society of Nova Scotia** — The Mining Society of Nova Scotia Holds its 24th Annual Fall Meeting, Vol. 83, No. 936, P18, Apr. 90.

- The 103rd Annual Meeting of The Mining Society of Nova Scotia, Vol. 83, No. 943, P12-20, Nov. 90.

## N

**New Brunswick Branch** — New Brunswick Branch holds its 20th Annual Convention, Vol. 83, No. 933, P10-16, Jan. 90.

- Annual Mini-Convention of New Brunswick Branch, Vol. 83, No. 939, P23, July 90.

**Newfoundland Branch** — Report on the 36th Annual Meeting of the Newfoundland Branch of CIM, Vol. 83, No. 935, P12-20, Mar. 90.

**Newfoundland Branch Meeting** — Seventh District 1 Meeting and 37th Annual Meeting of the Newfoundland Branch, Vol. 83, No. 941, P28-32, Sept. 90.

**Newmann, G.** — CIM Obituaries, Vol. 83, No. 941, P25, Sept. 90.

## O

**Officers** — Nominations for Second Vice-President of The Metallurgical Society, Vol. 83, No. 937, P97, May 90.

**Operators Conferences** — Report on the 6th CIM Maintenance/Engineering Operators Conference, Vol. 83, No. 936, P11-13, Apr. 90.

## P

**Parr, T.M.** — CIM Obituaries, Vol. 83, No. 936, P22, Apr. 90.

**Penney, C.T.** — CIM Obituaries, Vol. 83, No. 943, P46, Nov. 90.

**Petroleum Society of CIM** — The Petroleum Society of CIM Engineers and The Society of Petroleum Plan International Joint Technical Meeting, Vol. 83, No. 934, P26, Feb. 90.

- CIM/SPE International Technical Meeting, Vol. 83, No. 937, P12, May 90.

- The Petroleum Society of CIM and AOSTRA 1991 Technical Conference, Vol. 83, No. 944, P12, Dec. 90.

**Polymetallic Belt** — Symposium ICM Rouyn-Noranda 1990 — La ceinture polymétallique du Nord-Ouest Québécois: 60 ans d'exploration minière/Northwest Quebec Polymetallic Belt: 60 Years of Mineral Exploration — Program, Vol. 83, No. 936, P26-39, Apr. 90.

**Proceedings** — Twenty-eighth Annual Conference of Metallurgists, Vol. 83, No. 933, P90-92, Jan. 90.

- Twenty-seventh Annual Conference of Metallurgists Symposia Proceedings, Vol. 83, No. 936, P72, Apr. 90.

**Programs** — Mining Automation, 4th Canadian Symposium, Vol. 83, No. 937, P14-17, May 90.

## R

**Réunion** — Septième réunion du district no 2/7th District 2 Meeting — Program, Vol. 83, No. 936, P44-52, Apr. 90.

## S

**Sherritt Hydrometallurgy Award** — The Sherritt Hydrometallurgy Award, Call for Nominations, Vol. 83, No. 937, P98, May 90.

**Society of Petroleum Engineers** — CIM/SPE International Technical Meeting, Vol. 83, No. 937, P12, May 90.

**Stan, K.** — CIM Obituaries, Vol. 83, No. 939, P29, July 90.

**Student Essay Competition** — CIM Student Essay Competition Winners, Vol. 83, No. 944, P21-22, Dec. 90.

**Symposia** — International Symposium on Electrometallurgical Plant Practice, Vol. 83, No. 934, P109, Feb. 90.

- Base Metals Symposium to be Held in New Brunswick, Vol. 83, No. 936, P9, Apr. 90.

- Mining Automation, 4th Canadian Symposium, Vol. 83, No. 937, P14-17, May 90.

- The Ernest Peters International Symposium on Hydrometallurgy Theory and Practice (the 20th Annual Hydrometallurgical Meeting), Program, Vol. 83, No. 939, P124-130, July 90.

- First International Symposium on Underground Sulphide Dust Explosions, Mine Fires, and Emergencies, Vol. 83, No. 938, P13, June 90.

- Base Metal Symposium, Program, Vol. 83, No. 938, P24-28, June 90.

- International Symposium on Electrometallurgical Plant Practice (the 20th Annual Hydrometallurgical Meeting), Program, Vol. 83, No. 939, P124-130, July 90.

- International Symposium on Interstitial-free Steel Sheet: Processing, Fabrication and Properties — Call for Papers, Vol. 83, No. 942, P95, Oct. 90.

- International Symposium on Environmental Controls in Metallurgical Industries, Vol. 83, No. 942, P95, Oct. 90.

- International Symposium on Extraction, Refining and Fabrication of Light Metals, Vol. 83, No. 942, P96, Oct. 90.

- Sixth Mineral Economics Symposium — Program, Vol. 83, No. 944, P25-28, Dec. 90.

- Report on the International Symposium on Electrometallurgical Plant Practice, Vol. 83, No. 944, P64-65, Dec. 90.

- Symposium ICM Rouyn-Noranda 1990 — La ceinture polymétallique du Nord-Ouest Québécois: 60 ans d'exploration minière/Northwest Quebec Polymetallic Belt: 60 Years of Mineral Exploration — Program, Vol. 83, No. 936, P26-39, Apr. 90.

## T

**Tarassoff, P.** — Towards the Year 2000, by P. Tarassoff, Vol. 83, No. 939, P12-20, July 90.

**Thoday, G.P.** — CIM Obituaries, Vol. 83, No. 942, P34-36, Oct. 90.

## U

**Udd, J.E.** — The CIM Education Committee's Survey of Graduates from Canadian Minerals Engineering and Technology Programs in 1989 and a Forward View, by J.E. Udd, Vol. 83, No. 938, P40, June 90.

**Underground Operators Conference** — Tenth CIM Underground Operators Conference/10e conférence des opérateurs de mines souterraines de l'ICM — Call for Papers/appel aux conférenciers, Vol. 83, No. 934, P30, Feb. 90.

- Tenth Underground Operators Conference of CIM/10e conférence ICM des opérateurs de mines souterraines, Vol. 83, No. 943, P35-43, Nov. 90.

## W

**Wade, E.J.** — CIM Obituaries, Vol. 83, No. 933, P40, Jan. 90.

**Walthier, T.N.** — CIM Obituaries, Vol. 83, No. 937, P26-27, May 90.

**Watson, R.M.** — CIM Obituaries, Vol. 83, No. 941, P25, Sept. 90.

**White, R.D.** — CIM Obituaries, Vol. 83, No. 939, P29, July 90.

**MINERAL DEPOSITS OF NORTHERN CORDILLERA — CIM SPECIAL VOLUME 37**  
**ORDER YOUR COPIES NOW**  
**AT CIM SECRETARIAT**

# General News Items

## A

**ACDI** — Bourses de l'ACDI a l'intention des professionnels, Vol. 83, No. 936, P76, Apr. 90.

**Acid Drainage** — Second International Conference on the Abatement of Acidic Drainage, Vol. 83, No. 940, P84, Aug. 90.

**Agglomeration** — Third International Symposium on Beneficiation and Agglomeration-ISBA 91, Vol. 83, No. 937, P67, May 90.

**Air and Waste Management Association** — Air and Waste Management Association Establishes Award, Vol. 83, No. 936, P87, Apr. 90.

**American Society for Nondestructive Testing** — American Society for Non-destructive Testing to Hold Conference in Seattle, Vol. 83, No. 940, P54, Aug. 90.

— ASNT 1991 Spring Conference, Vol. 83, No. 942, P60, Oct. 90.

**Archaeometallurgy** — Recent Developments in Archaeometallurgy, by M.L. Wayman, Vol. 83, No. 939, P121-123, July 90.

**Arctic Technology** — International Arctic Technology Conference, Vol. 83, No. 942, P60, Oct. 90.

**Asbestos** — International Conference on Asbestos Products, Vol. 83, No. 942, P99, Oct. 90.

**AusIMM** — The AusIMM 1990 Annual Conference, Vol. 83, No. 934, P61, Feb. 90.

**Awards** — The Manning Awards, Vol. 83, No. 933, P66, Jan. 90.

— Inco Ltd., Manitoba Division, Receives Silver Award in the Canada Awards for Business Excellence, Vol. 83, No. 935, P26, Mar. 90.

— CIDA Professional Awards, Vol. 83, No. 936, P76, Apr. 90.

— Air and Waste Management Association Establishes Award, Vol. 83, No. 936, P87, Apr. 90.

— Mine Reclamation Awards, Vol. 83, No. 940, P77, Aug. 90.

— First Annual Award of the Mason C.F. Kossatz Memorial Scholarship, Vol. 83, No. 944, P22, Dec. 90.

— Du Pont Creates Environmental Leadership Award for Base and Precious Metals Mining Industry, Vol. 83, No. 944, P32, Dec. 90.

## B

**Ball Milling Circuits** — Opportunity Created for Significant Improvements in Ball Milling Efficiency, Vol. 83, No. 934, P38-39, Feb. 90.

**Base Metals** — Base Metal Symposium, Vol. 83, No. 926, P104, Apr. 90.

**Bellis, J.P.** — Faster Deployment of Men and Materials in Large and Small Mines, by J.P. Bellis and S. Waterworth, Vol. 83, No. 933, P36-37, Jan. 90.

**Beneficiation** — Third International Symposium on Beneficiation and Agglomeration-ISBA 91, Vol. 83, No. 937, P67, May 90.

**Blast Furnaces** — Are Blast Furnaces Passé?, Vol. 83, No. 938, P41, June 90.

**British Columbia Geological Survey** — The British Columbia Geological Survey — a Growing Provincial Resource, Vol. 83, No. 934, P39-41, Feb. 90.

## C

**CIDA** — CIDA Professional Awards, Vol. 83, No. 936, P76, Apr. 90.

**Calder, P.N.** — Attracting Students to the Resource Industry, by Peter N. Calder, Vol. 83, No. 940, P40-41, Aug. 90.

**Canadian Council of Professional Engineers (CCPE)** — CCPE Announces National Scholarship Program, Vol. 83, No. 934, P100, Feb. 90.

**Clark, Karl A.** — Oil Sands Scientist: The Letters of Karl A. Clark, 1920-1949, Vol. 83, No. 933, P37, Jan. 90.

**Coal Technology** — Study of Clean-coal Technology, Vol. 83, No. 943, P75, Nov. 90.

**Colloques** — Colloque sur le drainage et la réduction des effluents acides, Vol. 83, No. 940, P70, Aug. 90.

**Column Flotation Measurement Systems** — Better Control for Maximum Returns from your Columns, Vol. 83, No. 928, P41, June 90.

**Composites** — High Performance Composites for the 1990s, Vol. 83, No. 937, P67, May 90.

— Conference on Fabrication of Reinforced Metal Composites, Vol. 83, No. 940, P60, Aug. 90.

**Computer Aided Mineral Processing (CAMP)** — CANMET Develops Computer Aided Mineral Processing Program, Vol. 83, No. 936, P82, Apr. 90.

**Computer Applications** — Workshop on Mine Planning with Computers, Vol. 83, No. 940, P48, Aug. 90.

— Second Symposium on Application of Mathematical Methods and Computers in Geology, Mining and Metallurgy, Vol. 83, No. 944, P72, Dec. 90.

**Conferences** — Air & Waste Management Association to Hold Specialty Conference, Vol. 83, No. 933, P66, Jan. 90.

— The AusIMM 1990 Annual Conference, Vol. 83, No. 934, P61, Feb. 90.

— Second Canadian Materials Science Conference, Vol. 83, No. 934, P91, Feb. 90.

— Mine Geologists' Conference, Vol. 83, No. 936, P83, Apr. 90.

— First European Conference on Continuous Casting, Vol. 83, No. 936, P87, Apr. 90.

— 1991 Rapid Excavation and Tunneling Conference, Vol. 83, No. 936, P87, Apr. 90.

— GeoInfo IV, Vol. 83, No. 936, P93, Apr. 90.

— Ground Control in Mining, Vol. 83, No. 936, P107, Apr. 90.

— Rare Metals '90, Vol. 83, No. 936, P107, Apr. 90.

— World Conference on Environmental Control in the Steel Industry, Vol. 83, No. 937, P40, May 90.

— High Performance Composites for the 1990s, Vol. 83, No. 937, P67, May 90.

— Annual Meeting of the Technical Section, CPPA, Vol. 83, No. 937, P91, May 90.

— Speciality Conference/Conférence spécialisée, Vol. 83, No. 938, P48, June 90.

— Peat 90, Vol. 83, No. 938, P66, June 90.

— Minesafe International 1990, Vol. 83 No. 938, P66, June 90.

— EMC — First European Metals Conference, Vol. 83, No. 938, P89, June 90.

— Industrial Minerals '90, Vol. 83, No. 939, P88, July 90.

— Maintenance Conference 1991, Vol. 83, No. 939, P98, July 90.

— SME 120th Annual Meeting, Vol. 83, No. 939, P102, July 90.

— Eighth Thematic Conference on Geologic Remote Sensing, Vol. 83, No. 939, P120, July 90.

— International Deep Mining Conference, Johannesburg, South Africa, Sept. 17-21, 1990, Vol. 83, No. 940, P43, Aug. 90.

— American Society for Nondestructive Testing to Hold Conference in Seattle, Vol. 83, No. 940, P54, Aug. 90.

— Long-distance Commuting in the Mining Industry, Vol. 83, No. 940, P60, Aug. 90.

— Conference on Fabrication of Reinforced Metal Composites, Vol. 83, No. 940, P60, Aug. 90.

— Second International Conference on the Abatement of Acidic Drainage, Vol. 83, No. 940, P84, Aug. 90.

— International Petroleum Industry Inspection Technology Topical Conference, Vol. 83, No. 941, P101, Sept. 90.

— ASNT 1991 Spring Conference, Vol. 83, No. 942, P60, Oct. 90.

— International Arctic Technology Conference, Vol. 83, No. 942, P60, Oct. 90.

— MTI Sponsors Second Industrial Equipment Maintenance Technology Conference, Vol. 83, No. 942, P64, Oct. 90.

— Eighth Thematic Conference on Geologic Remote Sensing, Vol. 83, No. 942, P74, Oct. 90.

— Seventh World Conference on Titanium, Vol. 83, No. 942, P89, Oct. 90.

— Minerals, Metals and the Environment — Call for papers, Vol. 83, No. 942, P89, Oct. 90.

— International Conference on Asbestos Products, Vol. 83, No. 942, P99, Oct. 90.

— International Conference on Mining and Minerals Finance and Technology, Vol. 83, No. 943, P60, Nov. 90.

— World Gold '91, Vol. 83, No. 943, P65, Nov. 90.

— EMC '91, First European Metals Conference, Vol. 83, No. 943, P73, Nov. 90.

— Tenth Rapid Excavation and Tunneling Conference, Vol. 83, No. 943, P75, Nov. 90.

— Exploration and the Environment, Vol. 83, No. 944, P50, Dec. 90.

— Minerals, Metals and the Environment, Vol. 83, No. 944, P50, Dec. 90.

— Second Canadian Materials Science Conference Report, Vol. 83, No. 944, P60-61, Dec. 90.

**Congresses** — Fourteenth World Mining Congress, Vol. 83, No. 936, P113, Apr. 90.

— Fourteenth Congress of the Council of Mining and Metallurgical Institutions, Vol. 83, No. 938, P84, June 90.

— INFACON 6: 1992, Vol. 83, No. 940, P89, Aug. 90.

— International Congress on Mine Design, Vol. 83, No. 941, P80, Sept. 90.

— International Ocean Technology Congress, Vol. 83, No. 943, P65, Nov. 90.

— Twelfth International Corrosion Congress, Vol. 83, No. 944, P32, Dec. 90.

*Continuous Casting* — First European Conference on Continuous Casting, Vol. 83, No. 936, P87, Apr. 90.

*Copper Refining* — A New Continuous Melting and Refining Process for Copper, Vol. 83, No. 940, P42-43, Aug. 90.

*Corrosion* — Corrosion/91, Vol. 83, No. 943, P75, Nov. 90.

- Twelfth International Corrosion Congress, Vol. 83, No. 944, P32, Dec. 90.
- Symposium on Refining Industry Corrosion, Vol. 83, No. 944, P55, Dec. 90.
- Corrosion/91 Evaluation and Performance of Metallic Materials for Sour Service Symposium, Vol. 83, No. 942, P83, Oct. 90.

*Courses* — Postgraduate Courses on Geostatistics and Project Planning, Vol. 83, No. 933, P56, Jan. 90.

- MAC Short Course, Vol. 83, No. 933, P101, Jan. 90.
- Short Course on Acid Mine Drainage, Vol. 83, No. 934, P55, Feb. 90.
- Open Pit Mine Engineering Course Offered, Vol. 83, No. 942, P83, Oct. 90.

## D

*Databases* — Information Doesn't Cost — It Pays!, Vol. 83, No. 939, P88, July 90.

*Dengler, W.R.* — Technology in the Nineties: A Maintenance Perspective, by W.R. Dengler, Vol. 83, No. 937, P28-33, May 90.

*Dross Processing Technology* — Alcan Announces New Dross Processing Technology, Vol. 83, No. 934, P38, Feb. 90.

## E

*Earth Science* — Earth Science Research Project, Vol. 83, No. 940, P54, Aug. 90.

*Education* — CCPE Announces National Scholarship Program, Vol. 83, No. 934, P100, Feb. 90.

- Inco Invest in Queen's University Mining Education, Vol. 83, No. 936, P107, Apr. 90.
- Attracting Students to the Resource Industry, by Peter N. Calder, Vol. 83, No. 940, P40-41, Aug. 90.

*Energy Sources* — Peat — a New Industrial Fuel, Vol. 83, No. 937, P26, May 90.

*Energy Technology Projects* — SESAME Information Databank, Vol. 83, No. 936, P104, Apr. 90.

*Environment* — Air & Waste Management Association to Hold Specialty Conference, Vol. 83, No. 933, P66, Jan. 90.

- The Environmental Achievement Awards, Vol. 83, No. 934, P55, Feb. 90.
- Ontario Round Table on Environment and Economy, Vol. 83, No. 934, P68, Feb. 90.
- MEND: A National Program for Mine Environment Neutral Discharge, by E.G. Joe, Vol. 83, No. 935, P28, Mar. 90.
- Mining and the Environment in Canada: Policies, Performance, and Perceptions, by C.G. Miller, Vol. 83, No. 939, P30-34, July 90.
- MEND Board Approves New Project for 1990, Vol. 83, No. 939, P35, July 90.
- International Symposium on Recycling of Metals and Engineered Materials, Vol. 83, No. 939, P120, July 90.
- Second International Conference on the Abatement of Acidic Drainage, Vol. 83, No. 940, P84, Aug. 90.
- International Toxic Air Measurement Symposium, Vol. 83, No. 940, P93, Aug. 90.
- Air and Waste Management Meeting, Vol. 83, No. 941, P80, Sept. 90.
- Management of Environmental Technology, by John J. Laffin, Vol. 83, No. 942, P44-46, Oct. 90.
- Minerals, Metals and the Environment — call for papers, Vol. 83, No. 942, P89, Oct. 90.

*Environmental Control* — World Conference on Environmental Control in the Steel Industry, Vol. 83, No. 937, P40, May 90.

*Environmental Leadership Award* — Du Pont Creates Environmental Leadership Award for Base and Precious Metals Mining Industry, Vol. 83, No. 944, P32, Dec. 90.

*Environmental Management* — Environmental Management for the 1990s, Vol. 83, No. 944, P32, Dec. 90.

*Equipment* — Portable Shelters Ideal for Rugged Terrain, Vol. 83, No. 944, P75, Dec. 90.

*Equipment Maintenance Technology* — Technology in the Nineties: A Maintenance Perspective, by W.R. Dengler, Vol. 83, No. 937, P28-33, May 90.

- MTI Sponsors Second Industrial Equipment Maintenance Technology Conference, Vol. 83, No. 942, P64, Oct. 90.

*Equipment Selection* — International Symposium on Mine Planning and Equipment Selection in Surface Mining, Vol. 83, No. 942, P64, Oct. 90.

*Exploration Research* — Queen's University Geological Exploration Research, Vol. 83, No. 933, P101, Jan. 90.

*Extractive Metallurgy* — ISRADEMT II, Vol. 83, No. 942, P64, Oct. 90.

## F

*Feasibility Studies* — Study of Clean-coal Technology, Vol. 83, No. 943, P75, Nov. 90.

*Ferroalloys Industry* — INFACON 6: 1992, Vol. 83, No. 940, P89, Aug. 90.

*Forum* — Technology in the Nineties: A Maintenance Perspective, by W.R. Dengler, Vol. 83, No. 937, P28-33, May 90.

- Mining and the Environment in Canada: Policies, Performance, and Perceptions, by C.G. Miller, Vol. 83, No. 939, P30-34, July 90.
- Attracting Students to the Resource Industry, by Peter N. Calder, Vol. 83, No. 940, P40-41, Aug. 90.
- Management of Environmental Technology, by John J. Laffin, Vol. 83, No. 942, P44-46, Oct. 90.

## G

*GAC/MAC* — MAC Short Course, Vol. 83, No. 933, P101, Jan. 90.

*GASReP* — First Annual Groundwater and Soil Remediation RD&D Symposium, Vol. 83, No. 943, P60, Nov. 90.

*Geological Association of Canada (GAC)* — GAC/MAC Annual Meeting Scheduled for Vancouver, Vol. 83, No. 936, P93, Apr. 90.

*Geological Survey* — The British Columbia Geological Survey — a Growing Provincial Resource, Vol. 83, No. 934, P39-41, Feb. 90.

*Geology* — International Geology Meeting, Vol. 83, No. 943, P60, Nov. 90.

*Geoscience* — GeoInfo IV, Vol. 83, No. 936, P93, Apr. 90.

- Thirteenth Annual Mines and Minerals Symposium, Vol. 83, No. 944, P55, Dec. 90.

*Geostatistics* — Postgraduate Courses on Geostatistics and Project Planning, Vol. 83, No. 933, P56, Jan. 90.

*Gold Mining* — World Gold '91, Vol. 83, No. 943, P65, Nov. 90.

*Ground Control* — Ground Control in Mining, Vol. 83, No. 936, P107, Apr. 90.

*Groundwater and Soil Remediation Program (GASReP)* — First Annual Groundwater and Soil Remediation RD&D Symposium, Vol. 83, No. 943, P60, Nov. 90.

## H

*Habashi, F.* — Gérard Letendre (1906-1988) and his Time, by F. Habashi, Vol. 83, No. 934, P111-114, Feb. 90.

- The Mining Book of Schwaz of 1556, by F. Habashi, Vol. 83, No. 937, P98-99, May 90.
- Chemistry and Metallurgy in the British Empire: Part I, by F. Habashi, Vol. 83, No. 941, P102-108, Sept. 90.
- Chemistry and Metallurgy in the British Empire: Part II, by F. Habashi, Vol. 83, No. 942, P90-93, Oct. 90.
- Ytterby — an Historical Landmark, by M. Muhammed and F. Habashi, Vol. 83, No. 944, P66-67, Dec. 90.

*Hall of Fame* — Canadian Mining Hall of Fame Names Eight New Inductees, Vol. 83, No. 936, P10, Apr. 90.

*Haulage Technology* — Faster Deployment of Men and Materials in Large and Small Mines, by J.P. Bellis and S. Waterworth, Vol. 83, No. 933, P36-37, Jan. 90.

*Heavy Fuel Oil Emulsion* — Unique Heavy Fuel Oil Emulsion Technology for Refinery Boilers and Fired Heaters, Vol. 83, No. 939, P36, July 90.

*Historical Metallurgy* — Observations on an Old Broad Axe — an Example of Steeling, by W.M. Williams, Vol. 83, No. 933, P93-95, Jan. 90.

- Gérard Letendre (1906-1988) and his Time, by F. Habashi, Vol. 83, No. 934, P111-114, Feb. 90.
- A Mini-history of the Rio Tinto (Spain) Region, by F.R. Morral, Vol. 83, No. 935, P150-154, Mar. 90.
- The Mining Book of Schwaz of 1556, by F. Habashi, Vol. 83, No. 937, P98-99, May 90.
- Recent Developments in Archaeometallurgy, by M.L. Wayman, Vol. 83, No. 939, P121-123, July 90.
- Temperature Measurements in Olden Tymes, by J.W. Matousek, Vol. 83, No. 940, P110-115, Aug. 90.
- Chemistry and Metallurgy in the British Empire: Part I, by F. Habashi, Vol. 83, No. 941, P102-108, Sept. 90.

- Chemistry and Metallurgy in the British Empire: Part II, by F. Habashi, Vol. 83, No. 942, P90-93, Oct. 90.
- A History of the Rare Earth Elements, by F.R. Morral, Vol. 83, No. 943, P97-99, Nov. 90.
- Ytterby — an Historical Landmark, by M. Muhammed and F. Habashi, Vol. 83, No. 944, P66-67, Dec. 90.

## I

*Inco Limited* — Inco Ltd., Manitoba Division, Receives Silver Award in the Canada Awards for Business Excellence, Vol. 83, No. 935, P26, Mar. 90.

*Industrial Minerals* — Forum on Geology of Industrial Minerals, Vol. 83, No. 936, P93, Apr. 90.

- Industrial Minerals '90, Vol. 83, No. 939, P88, July 90.

*Inspection Technology* — International Petroleum Industry Inspection Technology Topical Conference, Vol. 83, No. 941, P101, Sept. 90.

*Institute Name* — Petroleum Comes from the Cold, by B.J. McGuire, Vol. 83, No. 940, P18, Aug. 90.

*Ironmaking* — International Symposium/Workshop on Future Ironmaking Processes, Vol. 83, No. 935, P117, Mar. 90.

## K

*Kimberly Operations* — Cominco Ltd. Commits to Preparatory Work Required Prior to Resumption of Kimberley Operations, Vol. 83, No. 941, P26, Sept. 90.

## L

*Laffin, J.J.* — Management of Environmental Technology, by John J. Laffin, Vol. 83, No. 942, P44-46, Oct. 90.

*Laser Technology* — Unique Shaft Alignment System with Swedish Laser Technology, Vol. 83, No. 941, P26, Sept. 90.

*Letendre, Gérard* — Gérard Letendre (1906-1988) and his Time, by F. Habashi, Vol. 83, No. 934, P111-114, Feb. 90.

## M

*MEND* — MEND Board Approves new Project for 1990, Vol. 83, No. 939, P35, July 90.

- MEND: A National Program for Mine Environment Neutral Discharge, by E.G. Joe, Vol. 83, No. 935, P28, Mar. 90.

*MINPROC* — Information Doesn't Cost — It Pays!, Vol. 83, No. 939, P88, July 90.

*MINTEC* — Information Doesn't Cost — It Pays!, Vol. 83, No. 939, P88, July 90.

*Maintenance* — Maintenance Conference 1991, Vol. 83, No. 939, P98, July 90.

*Mason C.F. Kossatz Memorial Scholarship* — First Annual Award of the Mason C.F. Kossatz Memorial Scholarship, Vol. 83, No. 944, P22, Dec. 90.

*Materials Engineering* — International Deep Mining Conference, Johannesburg, South Africa, Sept. 17-21, 1990, Vol. 83, No. 940, P43, Aug. 90.

*Materials Science* — Second Canadian Materials Science Conference, Vol. 83, No. 934, P91, Feb. 90.

- Corrosion/91, Vol. 83, No. 943, P75, Nov. 90.
- Second Canadian Materials Science Conference Report, Vol. 83, No. 944, P60-61, Dec. 90.

*Mathematical Methods* — Second Symposium on Application of Mathematical Methods and Computers in Geology, Mining and Metallurgy, Vol. 83, No. 944, P72, Dec. 90.

*Matousek, J.W.* — Temperature Measurements in Olden Tymes, by J.W. Matousek, Vol. 83, No. 940, P110-115, Aug. 90.

*McGuire, B.J.* — Petroleum Comes from the Cold, by B.J. McGuire, Vol. 83, No. 940, P18, Aug. 90.

*Meetings* — SME Annual Meeting, Vol. 83, No. 933, P78, Jan. 90.

- GAC/MAC Annual Meeting, Vol. 83, No. 934, P83, Feb. 90.
- Abstracts of Papers — 1990 Prospectors and Developers Association Annual Meeting, Vol. 83, No. 939, P113-120, July 90.
- Air and Waste Management Meeting, Vol. 83, No. 941, P80, Sept. 90.
- International Geology Meeting, Vol. 83, No. 943, P60, Nov. 90.
- Second Canadian Materials Science Conference Report, Vol. 83, No. 944, P60-61, Dec. 90.

*Metal Composites* — Conference on Fabrication of Reinforced Metal Composites, Vol. 83, No. 940, P60, Aug. 90.

*Metallurgical Plants* — International Deep Mining Conference, Johannesburg, South Africa, Sept. 17-21, 1990, Vol. 83, No. 940, P43, Aug. 90.

*Metallurgical Processing* — Workshop on Emerging Technologies for Metallurgical and Metals Processing, Vol. 83, No. 941, P115, Sept. 90.

- Emerging Technologies for Metallurgical and Metals Processing, Vol. 83, No. 942, P71, Oct. 90.

*Metallurgy* — Technological Congress, Vol. 83, No. 934, P55, Feb. 90.

- EMC — First European Metals Conference, Vol. 83, No. 938, P89, June 90.

*Metals* — Minerals, Metals and the Environment — Call for papers, Vol. 83, No. 942, P89, Oct. 90.

*Miller, C.G.* — Mining and the Environment in Canada: Policies, Performance, and Perceptions, by C.G. Miller, Vol. 83, No. 939, P30-34, July 90.

*Mine Design* — International Congress on Mine Design, Vol. 83, No. 941, P80, Sept. 90.

*Mine Geology* — Mine Geologists' Conference, Vol. 83, No. 936, P83, Apr. 90.

*Mine Operations* — Faster Deployment of Men and Materials in Large and Small Mines, by J.P. Bellis and S. Waterworth, Vol. 83, No. 933, P36-37, Jan. 90.

*Mine Planning* — International Symposium on Mine Planning and Equipment Selection in Surface Mining, Vol. 83, No. 942, P64, Oct. 90.

*Mine Waste* — MEND: A National Program for Mine Environment Neutral Discharge, by E.G. Joe, Vol. 83, No. 935, P28, Mar. 90.

*Mineral Exploration* — Economic Guidelines for Mineral Exploration, Vol. 83, No. 942, P60, Oct. 90.

*Mineral Processing* — A New Continuous Melting and Refining Process for Copper, Vol. 83, No. 940, P42-43, Aug. 90.

*Mineral Processing Program* — CANMET Develops Computer Aided Mineral Processing Program, Vol. 83, No. 936, P82, Apr. 90.

*Mineralogical Association of Canada (MAC)* — GAC/MAC Annual Meeting Scheduled for Vancouver, Vol. 83, No. 936, P93, Apr. 90.

*Minerals* — Minerals, Metals and the Environment — call for papers, Vol. 83, No. 942, P89, Oct. 90.

*Minerals Finance* — International Conference on Mining and Minerals Finance and Technology, Vol. 83, No. 943, P60, Nov. 90.

*Minerals, Metals & Materials Society (TMS)* — Technological Congress, Vol. 83, No. 934, P55, Feb. 90.

*Mining Association of Canada* — Short Course, Vol. 83, No. 933, P101, Jan. 90.

*Mining Automation* — Mining Automation Symposium, Vol. 83, No. 933, P56, Jan. 90.

*Mining Operations* — Minerals, Metals and the Environment, Vol. 83, No. 944, P50, Dec. 90.

*Mining Technology* — Mining Technology Transfer Symposium, Vol. 83, No. 933, P56, Jan. 90.

*Morral, F.R.* — A Mini-history of the Rio Tinto (Spain) Region, by F.R. Morral, Vol. 83, No. 935, P150-154, Mar. 90.

- A History of the Rare Earth Elements, by F.R. Morral, Vol. 83, No. 943, P97-99, Nov. 90.

*Muhammed, M.* — Ytterby — an Historical Landmark, by M. Muhammed and F. Habashi, Vol. 83, No. 944, P66-67, Dec. 90.

## N

*Non-ferrous Metallurgy* — EMC '91, First European Metals Conference, Vol. 83, No. 943, P73, Nov. 90.

## O

*Ocean Technology* — International Ocean Technology Congress, Vol. 83, No. 943, P65, Nov. 90.

*Oil Sands* — Oil Sands '90 Tradeshow, Vol. 83, No. 933, P56, Jan. 90.

*Open Pit Mine Engineering* — Open Pit Mine Engineering Course Offered, Vol. 83, No. 942, P83, Oct. 90.

*Ore Estimation Technology* — New 3-D Ore Deposit Modelling and Estimation Technology, Vol. 83, No. 944, P75, Dec. 90.

*Ore Reserve Estimates* — Symposium on Ore Reserve Estimates, Vol. 83, No. 934, P91, Feb. 90.

## P

*Parsons, R.B.* — Fiscal Incentives for Mining in Canada, by R.B. Parsons, Vol. 83, No. 933, P87-89, Jan. 90.

- New Federal Tax Hits Mining Companies, by R.B. Parsons, Vol. 83, No. 936, P114-115, Apr. 90.

- New British Columbia Mining Tax, by R.B. Parsons, Vol. 83, No. 940, P94-95, Aug. 90.
- Peat** — Peat — A New Industrial Fuel, Vol. 83, No. 937, P26, May 90.
- Peat 90, Vol. 83, No. 938, P66, June 90.
- Petroleum** — Petroleum Comes in from the Cold, by B.J. McGuire, Vol. 83, No. 940, P18, Aug. 90.
- Process Metallurgy** — Symposium on Injection in Process Metallurgy, Vol. 83, No. 942, P64, Oct. 90.
- Processing Operations** — Minerals, Metals and the Environment, Vol. 83, No. 944, P50, Dec. 90.
- Project Planning** — Postgraduate Courses on Geostatistics and Project Planning, Vol. 83, No. 933, P56, Jan. 90.
- Prospecting in Areas of Glaciated Terrain** — Exploration and the Environment, Vol. 83, No. 944, P50, Dec. 90.
- Publications** — The Metallurgical Society of CIM Publications, Vol. 83, No. 942, P96, Oct. 90.

## Q

- Queen's University** — Queen's University Geological Exploration Research, Vol. 83, No. 933, P101, Jan. 90.
- Inco Invest in Queen's University Mining Education, Vol. 83, No. 936, P107, Apr. 90.

## R

- Rapid Excavation and Tunneling Conference** — 1991 Rapid Excavation and Tunneling Conference, Vol. 83, No. 936, P87, Apr. 90.
- Rare Metals** — Rare Metals '90, Vol. 83, No. 936, P107, Apr. 90.
- Rare Metals '90, Vol. 83, No. 939, P102, July 90.
- Reclamation Programs** — Mine Reclamation Awards, Vol. 83, No. 940, P77, Aug. 90.
- Remote Sensing** — Eighth Thematic Conference on Geologic Remote Sensing, Vol. 83, No. 939, P120, July 90.
- Eighth Thematic Conference on Geologic Remote Sensing, Vol. 83, No. 942, P74, Oct. 90.
- Research and Development** — Earth Science Research Project, Vol. 83, No. 940, P54, Aug. 90.
- Rio Tinto (Spain) Region** — A Mini-history of the Rio Tinto (Spain) Region, by F.R. Morral, Vol. 83, No. 935, P150-154, Mar. 90.
- Rock Boring Technology** — World Rock Boring Association, Vol. 83, No. 940, P84, Aug. 90.
- Rock Mechanics** — Rock Mechanics Seminar, Vol. 83, No. 933, P9, Jan. 90.
- Speciality Conference/conférence spécialisée, Vol. 83, No. 938, P48, June 90.

## S

- SESAME** — SESAME Information Databank, Vol. 83, No. 936, P104, Apr. 90.
- SME** — SME Annual Meeting, Vol. 83, No. 933, P78, Jan. 90.
- SME 120th Annual Meeting, Vol. 83, No. 939, P102, July 90.
- Safety** — New Mining Technology Promises to Save Lives and Money, Vol. 83, No. 939, P36, July 90.
- Safety and Health** — Minesafe International 1990, Vol. 83 No. 938, P66, June 90.
- Scholarships** — First Annual Award of the Mason C.F. Kossatz Memorial Scholarship, Vol. 83, No. 944, P22, Dec. 90.
- Schwaz, Mining Book of** — The Mining Book of Schwaz of 1556, by F. Habashi, Vol. 83, No. 937, P98-99, May 90.
- Seismic Technology** — New Mining Technology Promises to Save Lives and Money, Vol. 83, No. 939, P36, July 90.
- Seminars** — Rock Mechanics Seminar, Vol. 83, No. 933, P9, Jan. 90.
- Tenth Annual M.E.R.Q. Exploration Seminar, Vol. 83, No. 936, P9, Apr. 90.
- Seminar on Advances in Surface Mining Equipment Performance Monitoring, Vol. 83, No. 940, P93, Aug. 90.
- Economic Guidelines for Mineral Exploration, Vol. 83, No. 942, P60, Oct. 90.
- Society for Mining, Metallurgy, and Exploration** — SME Annual Meeting, Vol. 83, No. 933, P78, Jan. 90.
- Sour Service** — Evaluation and Performance of Metallic Materials for Sour Service Symposium, Vol. 83, No. 942, P83, Oct. 90.
- Steel Industry** — World Conference on Environmental Control in the Steel Industry, Vol. 83, No. 937, P40, May 90.
- Steeling** — Observations on an Old Broad Axe — an Example of Steeling, by W.M. Williams, Vol. 83, No. 933, P93-95, Jan. 90.

- Surface Mining** — International Symposium on Mine Planning and Equipment Selection in Surface Mining, Vol. 83, No. 942, P64, Oct. 90.
- Surface Mining Equipment** — Seminar on Advances in Surface Mining Equipment Performance Monitoring, Vol. 83, No. 940, P93, Aug. 90.
- Symposia** — Mining Technology Transfer Symposium, Vol. 83, No. 933, P56, Jan. 90.
- Mining Automation Symposium, Vol. 83, No. 933, P56, Jan. 90.
- Ernest Peters International Symposium on Hydrometallurgy Theory and Practice, Vol. 83, No. 933, P73, Jan. 90.
- Symposium on Ore Reserve Estimates, Vol. 83, No. 934, P91, Feb. 90.
- Beneficiation and Agglomeration — ISBA-91, Vol. 83, No. 934, P107, Feb. 90.
- International Symposium/Workshop on Future Ironmaking Processes, Vol. 83, No. 935, P117, Mar. 90.
- First International Mineral Industry Technology Transfer Symposium, Vol. 83, No. 935, P117, Mar. 90.
- 1990 TMS Meeting to Address Recycling Issue, Vol. 83, No. 936, P76, Apr. 90.
- Base Metal Symposium, Vol. 83, No. 926, P104, Apr. 90.
- Third International Symposium on Beneficiation and Agglomeration — ISBA 91, Vol. 83, No. 937, P67, May 90.
- Tunnelling '91, Vol. 83, No. 939, P83, July 90.
- Project Management: Tradition and Transition, Vol. 83, No. 939, P88, July 90.
- Rare Metals '90, Vol. 83, No. 939, P102, July 90.
- Fifth U.S. Mine Ventilation Symposium, Vol. 83, No. 939, P120, July 90.
- International Symposium on Recycling of Metals and Engineered Materials, Vol. 83, No. 939, P120, July 90.
- Workshop on Mine Planning with Computers, Vol. 83, No. 940, P48, Aug. 90.
- International Toxic Air Measurement Symposium, Vol. 83, No. 940, P93, Aug. 90.
- Second Symposium on Thermal Spraying, Vol. 83, No. 942, P54, Oct. 90.
- International Symposium on Mine Planning and Equipment Selection in Surface Mining, Vol. 83, No. 942, P64, Oct. 90.
- Symposium on Injection in Process Metallurgy, Vol. 83, No. 942, P64, Oct. 90.
- ISRADEMT II, Vol. 83, No. 942, P64, Oct. 90.
- Evaluation and Performance of Metallic Materials for Sour Service Symposium, Vol. 83, No. 942, P83, Oct. 90.
- First Annual Groundwater and Soil Remediation RD&D Symposium, Vol. 83, No. 943, P60, Nov. 90.
- Corrosion/91, Vol. 83, No. 943, P75, Nov. 90.
- Symposium on Refining Industry Corrosion, Vol. 83, No. 944, P55, Dec. 90.
- Thirteenth Annual Mines and Minerals Symposium, Vol. 83, No. 944, P55, Dec. 90.
- Second Symposium on Application of Mathematical Methods and Computers in Geology, Mining and Metallurgy, Vol. 83, No. 944, P72, Dec. 90.

## T

- Tax Notes** — Fiscal Incentives for Mining in Canada, by R.B. Parsons, Vol. 83, No. 933, P87-89, Jan. 90.
- New Federal Tax Hits Mining Companies, by R.B. Parsons, Vol. 83, No. 936, P114-115, Apr. 90.
- New British Columbia Mining Tax, by R.B. Parsons, Vol. 83, No. 940, P94-95, Aug. 90.
- Technology** — Technology in the Nineties: A Maintenance Perspective, by W.R. Dengler, Vol. 83, No. 937, P28-33, May 90.
- Unique Heavy Fuel Oil Emulsion Technology for Refinery Boilers and Fired Heaters, Vol. 83, No. 939, P36, July 90.
- Unique Shaft Alignment System with Swedish Laser Technology, Vol. 83, No. 941, P26, Sept. 90.
- Workshop on Emerging Technologies for Metallurgical and Metals Processing, Vol. 83, No. 941, P115, Sept. 90.
- International Conference on Mining and Minerals Finance and Technology, Vol. 83, No. 943, P60, Nov. 90.
- Technology Transfer** — First International Mineral Industry Technology Transfer Symposium, Vol. 83, No. 935, P117, Mar. 90.
- Thermal Spraying** — Second Symposium on Thermal Spraying, Vol. 83, No. 942, P54, Oct. 90.
- Titanium** — Seventh World Conference on Titanium, Vol. 83, No. 942, P89, Oct. 90.
- Titanium Dioxide** — TiO<sub>2</sub> Meeting, Vol. 83, No. 933, P66, Jan. 90.

*Toxic Air Measurements* — International Toxic Air Measurement Symposium, Vol. 83, No. 940, P93, Aug. 90.

*Tunnelling* — Tunnelling '91, Vol. 83, No. 939, P83, July 90.

— Tenth Rapid Excavation and Tunneling Conference, Vol. 83, No. 943, P75, Nov. 90.

## U

*Ultramar Canada* — Ultramar Canada — A Growing Force in Eastern Canada, Vol. 83, No. 943, P47, Nov. 90.

*Underground Mining* — International Deep Mining Conference, Johannesburg, South Africa, Sept. 17-21, 1990, Vol. 83, No. 940, P43, Aug. 90.

*Underwater Survey* — International Ocean Technology Congress, Vol. 83, No. 943, P65, Nov. 90.

*Université Laval* — Industrial Chair on Narrow Vein and Small Scale Mining, Vol. 83, No. 944, P22, Dec. 90.

## V

*Ventilation* — Fifth U.S. Mine Ventilation Symposium, Vol. 83, No. 939, P120, July 90.

## W

*Waterworth, S.* — Faster Deployment of Men and Materials in Large and Small Mines, by J.P. Bellis and S. Waterworth, Vol. 83, No. 933, P36-37, Jan. 90.

*Wayman, M.L.* — Recent Developments in Archaeometallurgy, by M.L. Wayman, Vol. 83, No. 939, P121-123, July 90.

*Williams, W.M.* — Observations on an Old Broad Axe — an Example of Steeling, by W.M. Williams, Vol. 83, No. 933, P93-95, Jan. 90.

*Workshops* — Workshop on Emerging Technologies for Metallurgical and Metals Processing, Vol. 83, No. 941, P115, Sept. 90.

— Emerging Technologies for Metallurgical and Metals Processing, Vol. 83, No. 942, P71, Oct. 90.

## Y

*Ytterby Mine* — Ytterby — an Historical Landmark, by M. Muhammed and F. Habashi, Vol. 83, No. 944, P66-67, Dec. 90.

## Z

*Zinc* — New Zinc Project in West Germany, Vol. 83, No. 933, P37, Jan. 90.

# Underground Support Systems— Special Volume 35

A beautifully hard-cover bound, 128-page Special Volume 35 is comprised of 19 papers from the CIM /CNCRM Symposium on Underground Support Systems which was held in September 1983.

This new volume edited by J.E. Udd, is amply illustrated with many diagrams and photos. Because nearly all of the papers in this volume are based on case history studies, the Rock Mechanics and Strata Control Committee has felt a strong obligation that these works should be preserved in the technical literature. There is a very real shortage of case history material available concerning rock mechanics applications. After reading the papers in this Special Volume, colleagues in rock mechanics and ground control will share those convictions. This volume helps to fill a void in the literature.

## ORDER FORM

**Available from:**

**Canadian Institute of Mining, Metallurgy and Petroleum**  
Xerox Tower, 1210-3400 de Maisonneuve Blvd. West  
Montreal, Quebec, H3Z 3B8

Please send me \_\_\_\_\_ copies of Special Volume 35.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Province: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Members	\$30.00	Payment by:
Non-members	\$40.00	Cheque <input type="checkbox"/> American Express <input type="checkbox"/> Master Card <input type="checkbox"/> Visa <input type="checkbox"/>
Students	\$20.00	
Postage and handling	\$ 3.00	Card No.: _____

**ALL PAYMENTS MUST BE PREPAID** Signature: \_\_\_\_\_

**Subject to 7% GST (except for orders outside Canada). GST No. R106861644**